THE UNIVERSITY OF ALBERTA

SOCIAL-EMOTIONAL CHARACTERISTICS OF PRESCHOOLERS WITH SPECIFIC LANGUAGE IMPAIRMENTS

BY

DONALD C. CROFT

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

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Here's to a fruitful, satisfying career.

Sincerely,

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Harold Ireton, Ph.D.

PS: Give my regards to Tom Paton

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In Replying Please Quote:

June 21, 1988

Donald Croft
c/o Glenrose Hospital
10230 - 111 Avenue
Edmonton, Alberta

Dear Donald:

Re: Research Proposal - Public Health Identification of Psychological Characteristics in Preschoolers who have Specific Language Impairments

Thank you for the opportunity to review your research proposal prior to implementation of the project. I have read the proposal and fully support the study objectives and design. I am excited with the prospect of having Alberta community health speech-language pathology programs participate in a study which has potential implications for improved coordination of services to communicatively handicapped preschoolers between our two professions.

As mentioned previously in earlier discussions about the project, I am unable to commit any significant time to the project out of our Department office due to manpower limitations. However, I would be pleased to be kept informed of progress with the project and would be prepared to assist in a consultative way if you require specific information or advice relating to the Community Health System. Also, please accept this letter of support as permission to utilize the CRISSP Severity Rating Scale and Disorder/Concomitant Condition classification system for your study with appropriate credit to Alberta Community and Occupational Health.

I felt your presentation of the research project at the Alberta Community Health Speech Pathology Program Meeting on February 19, 1988 was well received. The interest expressed by the Senior Clinicians bodes well for a potentially high participation rate by health units.

The clinicians are presently waiting for a formal request for participation from you which they will present to their Directors for approval.

Good luck with your project!

Sincerely,

Margaret Wanke

Margaret Wanke
Acting Manager
Speech Pathology and Audiology

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RELEASE FORM

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Date: 15 APRIL 1991

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THE UNDERSIGNED CERTIFY THAT THEY HAVE READ, AND RECOMMEND TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH FOR ACCEPTANCE, A THESIS ENTITLED SOCIAL-EMOTIONAL CHARACTERISTICS OF PRESCHOOLERS WITH SPECIFIC LANGUAGE IMPAIRMENTS SUBMITTED BY DONALD CHARLES CROFT IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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Date: 15 APRIL 1991

This dissertation is dedicated to

Paula, our children, and my parents

for their love and encouragement throughout the years.

Abstract

This study investigated the clinical and research implications of relationships between communication disorders, social-emotional problems, and family functioning for preschool children with specific language impairments. Speech-language pathologists in the public health system provided type and severity ratings of articulation, expressive language, and receptive language problems, and of style of conversational participation for 67 four- and five-year-old boys and girls identified as having specific language impairments. Each child's mother completed general information and history questionnaires that included the spousal relationship, depression, and life stress subscales of the Parenting Stress Index (Abidin, 1983); ratings of style of conversational participation, General Development scale of the Minnesota Child Development Inventory (Ireton & Thwing, 1972), and the Child Behavior Checklist (Achenbach & Edelbrock, 1983).

Results of the study indicated that the children are characterized by considerable heterogeneity in speech and language skills and in styles of conversational participation. 47% of the boys and 33% of the girls are reported to have clinically significant rates of behavior problems. The behavior problem profiles of girls show a stronger tendency toward significantly greater internalizing than externalizing problems as compared to boys who generally have similar levels of internalizing and

externalizing problems. 58% of the children are estimated to have attention-deficit hyperactivity disorders (ADHD). There is a significant negative relationship between severity of communication disorder and externalizing problems. Having articulation problems in addition to language problems does not increase nor decrease the frequency of behavior or social competence problems.

Behavior problem scores are best predicted by severity of ADHD and maternal spousal relationship stress ratings, while social competence problems scores are weakly predicted by severity of receptive language problem and ADHD ratings. Generally ratings of the severity of communication disorder are weakly and negatively predicted by the severity of externalizing problems and of maternal life stress ratings.

A number of clinical and theoretical hypotheses are offered as potential explanation for the observed relationships between communication disorders, social-emotional problems, and family functioning. The implications for greater collaboration between speech-language pathologists, psychologists, medical practitioners, and parents for providing public health and early intervention services for preschool children with specific language impairments are discussed.

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Last but certainly not least, I would like to extend very special thanks to the parents of these young children with specific language impairments who were willing to complete the many questionnaires for the potential benefit of future parents who come with their children seeking knowledge and help to the clinicians in the public health system.

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Chapter I

Social-emotional Characteristics of Preschoolers with Specific Language Impairments

Communicative competence is a fundamental and vital element in being human. However, in a recent epidemiological study, approximately 19% of 5-year-old children were identified as having a significant communication disorder (Beitchman, Nair, Clegg, Ferguson, & Patel, 1986). Clinical experience with children who have communication disorders (CD) has shown that child and/or family factors are related in a bi-directional manner to a child's progress in developing appropriate communication skills [note that for simplification purposes communication disorder(s) and communication disordered will be abbreviated to CD]. Examples of such factors are: difficult temperament, an attention deficit-hyperactivity disorder, cognitive delay, behavior problems, unsatisfactory parent-child relationship, parenting/marital stresses, impoverished social environments, and limited access to peers. Thus, a preschool child with a CD often has a variety of other special needs that may also require intervention because they have an impact on the child's quality of life (Cantwell & Baker, 1987a).

This study investigates the clinical and research implications of relationships between communication disorders, social-emotional disorders, and family functioning for preschool children with specific language impairments (SLI) [note that for simplication purposes specific language impaired and specific language impairment(s) will be abbreviated to SLI]. Children are referred to as SLI when their language impairment is their primary developmental problem with the absence of a variety of concomitant conditions as will be reviewed later. This study places particular emphasis on the strength and direction of the relationships between type and severity profiles of CD and characteristic social-emotional problem profiles.

Recent empirical studies suggest that attention deficit-hyperactivity disorders, emotional disturbance, and social competence problems are much more prevalent in children with CD than is commonly found in the general population of children and adolescents (Baker & Cantwell, 1987b; Beitchman et al., 1986). Such serious developmental problems may interfere with the treatment process for children with CD. These children with CD are at considerable risk for having long-term educational problems (Dudley-Marling, 1985; Dworkin, 1985). Over time educational failures probably have an increasingly reciprocal relationship with negative social-emotional

experiences and deficiencies in communicative competence. As provision of preventive mental health services is an important goal for society (Strayhorn & Strain, 1986) particular attention needs to be given to children whose communicative competence is limited.

Language impairments identified in the preschool years are often only the beginning of long-standing communication, academic, and psychiatric problems (Aram, Ekelman, & Nation, 1984). Although a high proportion of these children have these serious problems, some do not. On ethical and economic grounds, it is important to be able to determine who needs psychological and/or psychiatric services. Unfortunately, very little is known about the psychological characteristics and needs of preschool children with CD that would help clinicians and physicians in the Public Health system initially predict who might be at highest risk.

Although several researchers propose that there could be characteristic patterns of social-emotional behaviors related to particular profiles of CD, such patterns have not yet been identified. It is suggested that consideration of styles of conversational participation and/or severity of other communication skill deficits in these children might lead to relevant CD profiles being identified for the purpose of determining these relationships (Fey, 1986; Zubrick, 1984).

Fey (1986) hypothesized that the more areas of communication skill development that are deficient and/or the greater the severity of such deficits, the greater is the likelihood that the child will also have significant psychological problems. Beitchman, Hood, Rochon, and Peterson (1989) report research findings that support this hypothesis. However, investigation of the relationships between the number, type, and severity of communication deficits and the social-emotional problems of children with SLI has barely begun.

Limitations involving small sample size, lack of a normative reference group, poorly identified and/or inappropriately classified samples, and inadequate measures of social-emotional problems are identified in many of the studies. Such procedural problems confound the determination of relationships between communication and social-emotional disorders, and increase the difficulties inherent in interpretation, generalization, and replication.

To properly investigate the issues outlined above it is necessary to account for the inherent heterogeneity on a wide variety of parameters of children with CD. Researchers recommend providing more comprehensive assessment and accurate classification of the communication deficits in terms of the range and severity of articulation, voice, fluency, language, and pragmatic parameters (e.g., conversational participation) (Kretschmer & Kretschmer,

1982; McCormick, 1984; Stark & Tallal, 1981). This recommendation has grown out of an acknowledgement of the complex interdependence of cognitive, social, emotional, communication, and family variables in the development and maintenance of a CD.

Effective procedures for classifying children in terms of these multidimensional communication deficits could include procedures such as the Severity Rating Scale (Alberta Social Services and Community Health, 1987) and observational guidelines for style of conversational participation developed by Fey (1986). In addition to identification of communication skill deficits, the child must be evaluated for cognitive and social-emotional difficulties. Subject descriptions should include a wide variety of family/demographic information because experiential factors seem to have a reciprocal impact on both CD and social-emotional problems. Finally, it is suggested that focusing on an identifiable subgroup such as preschool children with SLI may also help to reduce some of the limitations found in earlier studies.

There are valid, reliable, and cost-effective means of providing the necessary diagnostic information related to cognitive and social-emotional development and to family/demographic factors. These measures involve indirect assessment using the parents' knowledge of and experience with their child in a wide variety of circumstances. It is

appropriate to involve parents closely in this identification process as they are essential to the planning and provision of treatment services. The continued widespread use of such measures may help to standardize the identification of clinically relevant factors related to the development of children with CD.

Having identified appropriate clinical measures for describing the development of preschool children with specific language impairments, this study used a correlational research design to add to our knowledge of the psychological characteristics of such children. Relationships were identified between CD profiles (type and severity of communication deficits), empirically derived social-emotional profiles, and relevant family/demographic factors. Two specific hypotheses were investigated: First, that as the severity of CD increased, behavior and social competence problems would increase; second, that children with speech and language problems would have significantly more behavior and social competence problems than would children with language problems only (controlling for the severity of the language problems). Finally, information from various parent report measures and speech-language pathologist classification procedures was used to identify potential risk factors which help to predict the severity of the CD, behavior problems, or social competence problems.

Chapter II

With a view to investigating the clinical and research implications of relationships between CD, social-emotional disorders, and family functioning, the literature review explores the range of current clinical knowledge and determines appropriate research strategies in these three areas. Particular emphasis is placed on what is known about preschool children with SLI. Attention is focused on cost-effective, valid, and reliable assessment and classification procedures that are appropriate for children with communication and/or social-emotional disorders. In addition, the review includes descriptions of such children's risk for psychiatric disorders and/or serious behavior problems, characteristic behavior problems, and family/social relationships.

Applied Research with Children Who Have Communication Disorders

Communicative Competence

According to Schiefelbusch and Pickar (1984), communicative competence entails using language appropriately in environmental contexts and as such is a culturally situated behavior. The interrelationships between communicative and social competence in normal development are described by many researchers (Halle, 1985).

Other researchers focus on these interrelationships as they relate to children with CD (Weiss & Lillywhite, 1981; Wilcox, 1984).

Communicative competence is an important component of normal development as "the preschool child who speaks well grows in knowledge, self control, power, social approval, attentiveness, and pride" (Verville, 1985, p. 87). Preschool children use language to affect their caregiver's behavior, in addition to labelling or describing their experiences and environments. "The speech acts that are used most often by children with language development below five years of age include requests for objects, requests for actions, requests for information, summons or callings, rule orderings, denials, assertions and statements of information" (Lucas, 1980, p. 198).

Bruner (1975) emphasizes that because children are not simply passive learners, the process of sequential and increasingly sophisticated caregiver-child patterns of communication during routine events is of primary importance in normal language acquisition. Peers and siblings are also important in this process as, through play, children expand their knowledge of the world and enlarge their ability to negotiate and interact with others.

In the child development literature, communication is used often as a general term and includes at least these

four components:

1. voice;
2. fluency;
3. resonance;
4. language:
    a. articulation/phonology,
    b. syntax and morphology (rules for governing word order),
    c. semantics or meaning of the words,
    d. pragmatics.

Of the above pragmatics seems to have the most direct relevance to psychological issues involving social-emotional development. However Prutting (1982) indicates that "while it is possible conceptually to separate pragmatics, semantics, syntax, and phonology from one another, and we often do, they are interrelated nevertheless and operate synergistically" (p. 124).

Bernstein and Tiegerman (1985) note that all children must master the rules of conversation involving topic orientation; general management of openings, closings, repairs, turn exchanges, and topic changes; and those involving the obligation to be clear, informative, and polite. "Although research has provided knowledge about the roots of conversation (eye gaze, turn taking, play routines), the ages and stages at which different conversational rules are learned have yet to emerge" (p.

101). Given the importance of these pragmatic skills to the development of communicative competence and ultimately social development, it is necessary to investigate the ability of a child with a language impairment to participate in meaningful conversations.

Characteristics and Prevalence of Children with Communication Disorders

According to Weiss and Lillywhite (1981) a CD involves "a disorder of hearing, speech, voice, rhythm, or language, singly or in combination, that prevents an individual from adequately receiving communication from another person or from communicating messages to another person, or both" (p. 12). A speech-language pathologist commonly investigates an individual's articulation/phonology, expressive/receptive language (particularly syntactic, morphological, and semantic), pragmatic language, voice/resonance, fluency, and hearing skills. Articulation involves the use of the lips, tongue, teeth, and hard and soft palates to form speech sounds (McCormick & Schiefelbusch, 1984, p. 4). McCormick and Schiefelbusch (1984) indicate that phonology is "the study of the system of speech sounds employed by native speakers of a language. English has approximately 43 sounds" (p. 8). Receptive language involves the comprehension or understanding of the meaning of spoken language, whereas expressive language involves the actual production of words, phrases, and sentences (McLean &

Snyder-McLean, 1978). McCormick and Schiefelbusch (1984) indicate that "voice disorders include pitch, intensity, and voice quality problems. Fluency problems include stuttering and cluttering" (p. 105). Finally, pragmatics involves "rules governing the practical use of communication" (Weiss, 1981, p. 12).

In a recent epidemiological study of 1,655 English-speaking five-year-old children in the Ottawa-Carleton region of Ontario, approximately 19% were identified as having a significant CD (Beitchman et al., 1986). The rate for girls ranged from 19.1% to 25.1% which was higher than the rate for boys which ranged from 15.5% to 20.7%. Of this total population 6.4% had speech problems only (boys were more predominant in this category than girls), 8.0% had language problems only, and 4.6% had speech and language problems.

Although thorough epidemiological studies of the prevalence of CD have not been completed in Alberta, a large number of children receive speech-language services through the public boards of health. For example, in 1986, speech-language pathologists with the 25 health units in Alberta assessed 2,384 preschool children, who encompassed 70% of the total number of individuals assessed. Of these preschool children, 1581 had some degree of language difficulty indentified. Based on a random sample of 200 of these language impaired children, Croft (1987) found that

approximately 25% were 4- or 5-year-old children, of which one third were girls and two thirds were boys. Of this subsample, 44% had only language problems, while 56% had speech and language problems; neither group had other concomitant developmental problems. It was noted that 1% also had some degree of voice or fluency problem. Given the number of children with CD indicated in the two studies above, such developmental problems and their associated impact on psychological functioning, educational achievement, and family relationships must be a significant concern for public health service providers.

A number of difficulties arise in comparing the findings from the various relevant research studies in the literature for clinical or research purposes. Many of the investigations in the literature are cross-sectional in nature rather than longitudinal, and very few were epidemiological in nature.

Another particularly important barrier to generalization of knowledge from previous research studies is that children with CD are heterogeneous on a variety of developmental and family variables. This heterogeneity has been described in terms of speech, language, hearing, social-emotional, visual, motor, cognitive, and neurological status. Other variables such as socioeconomic status, birth history, developmental milestone attainment, and family circumstances have been shown to be heterogeneous also.

Confusion occurs when this heterogeneity is not accounted for sufficiently by comprehensive subject specification, as the sample then includes children with an array of developmental disorders. Often children are classified as being CD if one of the variety of problems identified is in the communication domain. To combat this confusion, requests have been made for clinicians and researchers to be much more sensitive to these issues and to be comprehensive in their assessment procedures and selective in their classification procedures (Kretschmer & Kretschmer, 1982; McCormick, 1984; Stark & Tallal, 1981).

The longitudinal and epidemiological Newcastle Child Development Study (Fundudis, Kolvin, Garside & Scanlon, 1979) generally accounted for the heterogeneity of children with CD by using extensive assessment to create broad groups. Then cluster, correlational, factorial, and discriminant function analyses were used to further identify subclassifications. One subgroup of children, the specific speech delayed, were characterized by uneven and heterogeneous patterns of speech and language skills with problems identified in receptive and expressive language, phonological, and syntactic skills. They also had more normal motor milestones, higher social class, higher proportion of boys than girls, and a greater scatter on cognitive assessment, although with normal nonverbal skills, than other subgroups. The Newcastle study provides

preliminary evidence regarding relationships between a child's early language problems and later social and educational problems. However, this study has been criticized for its initial identification procedures regarding who would be classified as having a CD ("speech retarded"), as it did not afford sufficient inclusion of and discrimination between speech-only and language-only disorders (Beitchman et al., 1986).

The recent epidemiological study in Ottawa (Beitchman et al., 1986) described above accounted for the inherent heterogeneity of children with CD by using a series of assessment/screening procedures to refine speech/language groupings (Beitchman, Hood, Rochon, Peterson, Mantini & Majumdar, 1989). Their analyses yielded poor (auditory) comprehension, poor articulation, and low overall groups. To further account for the heterogeneity of the samples, there has been extensive reporting of the prevalence of speech and language impairments, (Beitchman et al., 1986), prevalence of psychiatric disorders (Beitchman et al., 1986), relevance of family demographic variables (Beitchman, Peterson, & Clegg, 1988), and behavioral characteristics (Beitchman, Hood, Rochon, & Peterson, 1989).

Even with children whose CD is considered an isolated developmental difficulty (e.g., those with SLI) homogeneity can not be assumed. Johnston (1982) calls for more extensive study of variability in children with SLI. In

addition, various researchers have described the vast range of speech and/or language skill deficits that children with SLI have in common with other groupings of special needs children (Kirchner & Skarakis-Doyle, 1983; Stark & Tallal, 1981; van Kleeck & Richardson, 1986).

Nevertheless, studies that have investigated the interrelationships between communication and other developmental variables have helped to improve the construction of models of communicative disability and hence guide provision of clinical services to the individual child. For example, many children with CD have known relationships between the disorder and other developmental handicaps, for example, hearing impairment, cerebral palsy, cleft palate, brain injury, mental retardation. These developmental handicaps have been presumed to be prime factors in the etiology of the disorder, but the importance of etiological factors is controversial.

Theoretical Models and Etiological Variables

In many ways it is amazing how the average child learns most of the rules relevant to the traditional communication skill categories of phonology, syntax, semantics and pragmatics by 5 years of age, involving a vocabulary of many hundreds of words. In an attempt to explain what has happened when children do not have normal language acquisition, many researchers and clinicians have turned to a variety of theories on normal development for explanatory

mechanisms. There are a number of such theories ranging from a strong role for biology (Nativism) (Chomsky, 1972) through to a strong role for environment (Operant) (Skinner, 1953). However, it is the middle ground of the interactionist perspective on normal speech and language acquisition (Bruner, 1975; van Kleeck & Richardson, 1986) that seems to hold the most explanatory power for determining the relationships between social, emotional, and communication skills and describing how communicative competence develops in the young child.

McCormick and Schiefelbusch (1984) describe some of the basic assumptions of the interactionist perspective as follows:

> Infants are born with a general propensity to perceive, organize and interact in certain ways, and the number and variety of experiences provided to the infant significantly affect learning. The interactionist perspective points to nature-nurture, adult-child, and environment-organism interactions as the key contributors and facilitators of language acquisition. (p. 29)

A number of researchers have drawn on these various theories to provide explanatory mechanisms for CD, that may also hold relevance for investigations into social-emotional problems. For example, Kirchner and Skarakis-Doyle (1983) describe an enhanced form of a normal developmental model that hypothesizes a "compensatory mechanism" (p. 228) involving cognitive, linguistic, or social skills that children use to minimize the effects of their primary

linguistic deficit. Aram and Nation (1982) provide another example in their use of the interactionist perspective to identify four primary sets of cause and effect interactions involving combinations of environment, information processing, and behavior parameters. They indicated "because multiple interactions may occur and these may change throughout the child's development, we have found it important to maintain a dynamic view of causation" (p. 83). Thus it is important to identify all the child's communication, psychological, and family/environment characteristics in order to determine interactions involved in the etiology of any individual child's CD.

Assessment and Classification

Numerous issues have been raised by researchers and clinicians regarding appropriate assessment and classification procedures for children with CD in order to account for heterogeneity. Of considerable concern is that definitions of speech and language impairments have varied across time, resulting in the current confusion in research and clinical studies regarding classification of children with CD. Controversy still rages as to who should be classified as language impaired (Fey, 1986).

A distinction has been made between the medical/etiological and descriptive models (Bloom & Lahey, 1978) of language impairments in terms of classifying children with CD into subgroups (van Kleeck & Richardson,

1986). According to Aram and Nation (1982) an emphasis on description based on the normal language acquisition model has sometimes led to differences between language impaired children being downplayed, which in turn has led to viewing language impaired children as a homogeneous group without regard to etiological considerations. They lament that such a practice has led to the fact that "today we know little more about etiologies that cause children to develop disordered language than we did 50 years ago when the field was only emerging" (p. 30). On the other hand, McCormick (1984) indicates that children classified in terms of presumed etiological factors often have similar CD and that such categories may provide little information that is clinically relevant. However, it is sometimes necessary to discuss subgroups (e.g., children with SLI) within the larger population of CD, as much of the research is currently so categorized (McCormick, 1984).

Stark and Tallal (1981) challenge researchers to develop appropriate speech and language profiles for children with CD in order to facilitate subject selection essential for interpretive, generalization, and replication purposes. Wickstrom, Goldstein, and Johnson (1985) provide some guidelines for the broad range of information that should be included in subject descriptions for research studies. Their guidelines include information on demographics; medical, developmental, and behavioral history

and status; language intervention history; and language preassessment information.

Assessment procedures involve standardized tests, developmental scales, nonstandardized tests, and behavioral observation. A serious problem is that many of the tests of speech and language performance do not meet even minimal requirements for the standardization of psychometric instruments (e.g., adequate normative studies) (McCauley and Swisher, 1987). Fey (1986) adds that tests "cannot supplant a clinician's judgment of the child's overall communicative difficulties as determined through careful observation in various speaking contexts and detailed interviews with the child's caregivers and teachers" (p. 40). Muma (1986) indicates that there has been "a decided shift in language assessment away from a psychometric normative orientation toward a descriptive orientation" (p. 263). However, both approaches are still useful in that the former approach is relevant for identification of children at risk, whereas the in-depth evaluation and description of the communication behaviors are more relevant for intervention purposes (Stark, Tallal, & Mellitis, 1982).

Although there are no universally acknowledged procedures or instruments useful for providing comprehensive assessment and classification information, there are several published guidelines. Bloom and Lahey (1978) developed a system for describing language impairments involving

content, form, and use. Shriberg and Kwiatkowski (1982) developed a specific battery of measures for differential classification of phonological disorders involving 90 hearing, speech, motor, language comprehension, language production, and psychosocial variables. However, this battery of measures may be unnecessarily time consuming in that it could take up to seven hours for both the child and the speech-language pathologist.

Most research studies simply use a specified battery of tests to measure the relevant developmental variables of their subjects, which may not be appropriate to the identification of many of the individual's range of communication deficits. A more flexible approach to classification for research purposes might be to use a speech-language pathologist's professional opinion, based on measures tailored to each individual child's particular presenting problems, rather than giving the same limited number of tests to all children regardless of their clinical/diagnostic value for the individual's CD.

Zubrick (1984) suggests classifying children with SLI by broadly differentiating in terms of type of impairment and then subcategorizing in terms of severity. Severity is often an important aspect of a speech-language pathologist's description of an individual child's deficient communication skills. Systems have been developed to provide meaningful operational definitions regarding type and severity

judgments for the purpose of ranking the treatment needs and then for determining the priority level for obtaining treatment services (Barker, Baldes, Jenkinson, Wilson,& Freilinger, 1982).

One such approach to type and severity classification is found in the Computerized Records and Information System for Speech Pathology (CRISSP) (Alberta Social Services and Community Health, 1987). The CRISSP has been used since October 1982, when field testing and subsequent revisions were started with speech-language pathologists in the 25 boards of health across Alberta. With the CRISSP the Severity Rating Scale provides a means to document the range of CD (articulation/phonology, language, fluency, and voice) on a severity scale of 0-5, using operational definitions related to formal and informal assessment findings. A recent review of some aspects of the Severity Rating Scales indicates that they would benefit from the following additions to be more useful for most applied research applications: a reliability study, a differential rating of expressive and receptive language skills, objective specification of the child's cognitive status, and inclusion of specific pragmatic skill parameters (Croft, 1988) (see Appendix 5 for an adapted version of the Severity Rating Scale).

There is a need to include pragmatic features in assessment and classification of children's CD. Fey (1986)

indicates that one major reason for the failure by researchers to make useful classifications of language impaired children is that the focus has always been solely on language form: vocabulary, syntax, morphology, and phonology, rather than also considering language use. While acknowledging the importance of descriptions of receptive and expressive language, Fey (1986) indicates that:

> Children who display similar profiles of the comprehension and production of language form can differ dramatically in their ability to communicate and to participate effectively in the exchange of information through discourse. (p. 98)

Relationships between conversational disability and language impairments have been studied increasingly (McTear, 1985b). However, few instruments have been validated for clinical practice, so clinicians generally have to rely on informal procedures and judgments based on their knowledge of current research (Butler, 1986).

Dollaghan (1987), among others has emphasized that the task of imposing criteria in an effort to create "homogeneous" subgroups of such children is by no means straightforward. One example of a research study designed to create subgroups is that of Bishop and Edmundson (1987). They identified four out of a possible 15 patterns that accounted for 71% of the children in their research sample. Such subgroups can be used for a variety of investigations. For example, outcomes at age 5.5 from scores at age 4 for children in these four patterns indicated that "the poorest

outcomes were found in children whose language was impaired on a wide range of measures, whereas the best outcome occurred in children with an isolated phonological impairment" (p. 166).

In recognizing the inherent heterogeneity of children with CD, there is a need for cost-effective, valid, and reliable assessment and classification measures/procedures for both clinical and research practice. The purpose of such practice is to be able to identify meaningful subgroups of children with relatively homogeneous profiles of developmental abilities. Some goals of such practice are that comparisons between these subgroups could be made across a wide variety of settings and children to provide a common ground for developing theoretical models of causality, for predicting which children are at greater risk for having associated developmental disorders, and for monitoring the differential effects of intervention strategies. One such subgroup that has shown some promise in terms of the goals listed above is children with SLI.

Children with Specific Language Impairments

A variety of terms are used in the literature to describe children whose principal developmental problem is their language impairment: SLI, developmental aphasic or language delayed, speech and language disordered. Although children with SLI are an identifiable subgroup in the literature, they are also noted for intra- and

inter-individual differences (Fundudis et al., 1979; Snyder, 1984). Stark and Tallal (1981) indicate that "children with a language impairment that is not related to hearing loss, mental retardation, or emotional disorder may still show different patterns of deficit in speech and language skills" (p. 122). Although children with SLI are heterogeneous, this lack of homogeneity is not always reflected in research sample subject descriptions. In addition, further research is needed to further identify meaningful subgroups of such children by inclusion of type and severity of CD descriptions.

Stark, Tallal, and McCauley (1988) have provided comprehensive research findings of 5-8-year-old children in terms of comparisons between groups with SLI (n=36), articulation impairments (n=36), or reading impairments (n=26), and a matched normal control (n=38) group involving the following parameters: verbal/nonverbal sensorimotor skills, visual scanning, neurological status, cognitive abilities, and patterns of deficit. It is noted that their samples excluded children "who had ever presented a severe behavior problem or special problems of adjustment at home or in school" (p. 25). They also excluded children with severe expressive language deficits but with normal receptive language functioning or children with articulation deficits exceeding their language impairment in severity.

Stark et al. (1988) characterize their sample of children with SLI as having "an inability both to perceive and to produce [verbal and nonverbal] information rapidly in time" (p. 164). From their findings they hypothesize that "a basic neural timing mechanism, which precludes both the integration and the production of information simultaneously (or quickly) in time, may be a sufficient explanation for specific developmental language disorders" (p. 164). They also reported on a follow-up study with some of the children after four years. Their findings suggest that children with SLI continue to make improvements to expressive language, receptive language, and articulation skills, but at a slower than normal rate. In addition, 90% of the children with SLI were found to have some degree of reading impairment, of whom 80% needed remedial instruction.

Researchers have investigated mother-child relationships in children with SLI. Cunningham, Siegel, van der Spuy, Clark, and Bow (1985) conducted three studies of behavioral and linguistic interactions. They conclude that the general patterns of reciprocal interaction for the children with SLI were quite normal. Although the children were relatively responsive to their mothers, at both age levels there was evidence of a lack of social initiative.

In keeping with a paradigm shift to include pragmatic behaviors in conceptualizations of language acquisition and of language impairments, the applied research literature

include several descriptions and reviews that underscore the heterogeneity of pragmatic development for children with SLI (Snyder, 1984; Wilcox, 1984). In particular, Fey and Leonard (1984) and Leonard (1986) both report that, contrary to popular opinion, passivity is not a generalized characteristic of SLI children. They interpret this finding as reflecting the benefits that the SLI children obtain from having greater cognitive knowledge, language comprehension, and general social skill development compared with their younger peers.

McTear (1985b) underscores that the type of language impairment does not predict a type of pragmatic disorder. In a similar vein, Fey and Leonard (1984) indicate that because certain pragmatic skills develop independently of syntactic abilities, children with similar formal linguistic skills may be found to have different styles of social conversation. Given that the population of children with SLI is quite heterogeneous, "the pragmatic variables may be useful in distinguishing among subgroups within the clinical population" (Fey & Leonard, 1984, p. 422).

Fey and Leonard (1983) and Fey (1986) describe children with SLI as having conversational patterns of assertiveness and responsiveness that covary with impairments in language comprehension and with social, cognitive, personality, and environmental factors. The relationships and processes involved have not yet been clearly identified. However, a

clinician's judgment of the child's overall communicative difficulties, as determined by observation and interviews, should be of considerable importance to the diagnostic and treatment process by which such relationships might eventually be determined (Fey, 1986).

Fey (1986) developed a classification system related to conversational style that has implications for treatment of children with language impairments. The system has four categories built around various combinations of two variables, assertiveness and responsiveness, that are described on intersecting continuums. Children in each category represent a tendency toward different patterns of social-conversational activity as follows:

> (1) assertive and responsive conversationalists (or active conversationalists),
> (2) responsive but non-assertive conversationalists (or passive conversationalists),
> (3) children who are neither responsive nor assertive in conversations (or inactive communicators), and
> (4) children who are verbally active but unresponsive to the conversational needs of their partners (or verbal noncommunicators). (p. 68)

Fey (1986) states that placement of a child in any category, in terms of assertiveness and responsiveness, reflects a subjective judgment for that child based on developmental expectations giving due consideration to the child's age, cognitive abilities, and formal linguistic skills. Children in each category may have different etiologies and formal linguistic skills, but based on their social-conversational style, there could be many

similarities in the focus of treatment intervention. Adding descriptions of the social-conversational style to comprehensive assessment and classification procedures in both clinical and research practices may prove to be helpful in identifying meaningful subgroups of children with SLI.

Summary of Recommended Procedures for Research

The following is a brief summary of the foregoing review of the literature on research practices with children who have CD. It is important to account for the inherent heterogeneity of this population for interpretive, generalization, and replication purposes. Thus, research studies should include comprehensive, valid, and reliable assessment, description, and classification of children with CD. Such procedures should include an indication of the severity of deficiencies in articulation, fluency, voice, receptive and expressive language, and pragmatic development, including cognitive and psychosocial parameters (Kretschmer & Kretschmer, 1982; McCormick, 1984; Stark & Tallal, 1981). This review highlights one procedure for identifying the type and severity of CD, the Severity Rating Scale from the CRISSP system (Alberta Social Services and Community Health, 1987). A potential problem in pursuing this ideal of including cognitive and psychosocial parameters is that speech-language pathologists may not be good judges of cognitive and/or social-emotional skills in CD children, including related family variables, as it is

not in their scope of practice. It is important, therefore, to consider what cost-effective, reliable, and valid measures can be used by clinicians, researchers, and/or consulting physicians for clinical or research purposes.

Focusing on characteristic subgroups of children with CD such as SLI may reduce confusion in interpretation, generalization, and replication found in many studies in this area. There may be characteristic or clinically relevant subgroupings of SLI children who could be identified through improved assessment and classification procedures, such as identifying a child's style of conversational participation and/or type and severity of speech and language deficits.

Requests in the literature for more comprehensive identification, description, and classification of children in research studies parallel an increasing acknowledgement of the complex interdependence of cognitive, social, emotional, communication, and family variables in developmental research studies. However, little is known about the processes involved in this interdependence. Studying children with SLI might hold a great deal of promise for evaluating the relationships between emerging language (or lack thereof) and social and emotional development (Tallal, Dukette, & Curtiss, 1989).

Indirect Assessment of Psychological Development and Psychosocial Factors

In the previous section it is indicated that information related to cognitive, social-emotional, and family/demographic related factors needs to be included in subject identification and description for research studies. It is proposed that such information would facilitate classification of the children into meaningful subgroups which would improve the generalizability of the findings. The measures used to provide this information must be cost-effective as well as valid and reliable.

In terms of clinical practice there are limitations in the Public Health system involving the availability of staff and financial costs regarding the provision of direct services to children with CD. In this regard and others, speech-language pathologists have long recognized the benefits of involving parents in the assessment and intervention processes. Fey (1986) provided a number of explicit guidelines for when and how to involve parents and examined issues related to the promise of greater effectiveness at lower cost.

Indirect screening procedures involving parent rating scales have been used to identify children who are at risk for developmental problems and/or school failure for both clinical and research purposes (Dean & Steffen, 1984). In addition to cognitive and/or general developmental

information, parents should be an excellent source of details regarding temperament, social competence, and behavior problems in preschoolers. Parents are a ready source of information regarding parenting stresses and relevant aspects of the home environment. They provide unique and critical information that cannot be obtained from direct medical or psychological assessment. "Research suggests that parents are most likely to provide trustworthy information when the method employed is structured, includes clear instructions and specific items, and the information requested pertains to the child's current observable behavior" (Lichtenstein & Ireton, 1984, p. 101). Parent rating scales can be a cost-effective and useful means of early identification before a pattern of failure becomes firmly entrenched (Lichtenstein & Ireton, 1984). It is particularly important to involve parents as they are essential to the planning and provision of early education/treatment services.

Developmental/Cognitive Assessment

Various scales have been developed for parents to complete for the purpose of identifying which children probably need more extensive and direct assessment services. A prime example is the Minnesota Child Development Inventory (MCDI) (Ireton & Thwing, 1972). It provides normative information about a wide variety of important preschool developmental parameters and has been advocated for use at

health care clinics (Kenny, Hebel, Sexton, & Fox, 1987). It has good validity and reliability as established by empirical study (Colligan, 1977; Ireton, Thwing, & Currier, 1977). It has been clinically useful in screening both special needs children (Ullman & Kausch, 1979) and normal children (Gottfried, Guerrin, Spencer, & Meyer, 1984) for level of cognitive functioning, in comparison with scores obtained on the McCarthy Scales of Children's Abilities. It has been valuable in distinguishing between problem and nonproblem children (Garrity & Servos, 1978). The MCDI is a well standardized instrument that has proven a valuable addition to other clinical assessment and interview techniques for the assessment of psychological development (Colligan, 1985).

Social-Emotional Disorders

Many issues in the assessment and classification of social-emotional disorders must be considered when developing research strategies to investigate relationships between CD and social-emotional problems in preschoolers. Generally, the types of behavior problems that children with CD have differ only in degree and not in kind from those in the general population (Schloss, 1984). Thus it is important to describe current clinical practices for the identification of social-emotional problems of preschoolers in general. Emphasis is placed on parent report measures.

It is commonly held that having a multitude of behavior problems is typical for young children, so determination of the significance of the cluster of individual symptoms can be problematic. Clinicians focus on a number of features when determining the clinical significance of young children's behavior.

> These features include the number, severity and persistence of the behavioral difficulties; evidence of disturbed relationships within the family; and evidence of impaired development in the child whether in social, emotional, intellectual, language, or physical development. An understanding of the developmental changes associated with normal maturation is essential for adequate assessment. (Richman, 1985, p. 336)

Richman indicates that when a child has behavior problems it is important to determine the nature of the relationship to any developmental impairments and the contribution that is being made by social relationships in the child's environment. Sometimes identification of behavior problems simply reflects other family problems or a mismatch between parent expectations and normal child behavior.

Parents are most often the initial source for referral of preschoolers to mental health professionals, and parent report is a prime source of assessment information. There are at least three purposes to assessment in the determination of social-emotional disorder: screening, classification, and guidance of intervention efforts. Increasingly in the literature clinicians and researchers are calling for multiple techniques, measures, and persons to be included in the determination and intervention of

social-emotional disorder (Achenbach, McConaughy, & Howell, 1987).

Two major approaches to assessment and classification of social-emotional disorders are often compared with each other. The first generally involves direct observation and interviewing by a clinician using the guidelines of a formal system such as is provided by the Diagnostic and Statistical Manual of Mental Disorders III-Revised (DSM III-R) (American Psychiatric Association, 1987) to obtain a psychiatric diagnosis. A second approach uses empirically derived psychometric scales involving the rating of a variety of behaviors by parents, teachers, peers, or the child. One example is the Child Behavior Checklist (CBCl) (Achenbach & Edelbrock, 1983), which can be used to obtain various profiles of social-emotional behaviors. In the literature considerable controversy surrounds the validity, reliability, and utility of the psychiatric approaches (Achenbach, 1985; Clarizio & McCoy, 1983; Knoff, 1986), while the empirically based approaches are thought to hold considerable promise (Achenbach & McConaughy, 1987; Knoff, 1986; McMahon & Peters, 1985).

Although "the mental health fields have accumulated a vast array of theories, ranging from neurochemistry and operant conditioning to psychoanalysis and family systems" (Achenbach & McConaughy, 1987, p. 13), the rating scale assessment systems do not rely on theoretical

conceptualizations for the determination of the presence or risk of disorder. According to Martin, Hooper, and Snow (1986) use of parent rating scales can capitalize on the parents' ability to observe the child in a normal environment and as a natural part of that environment over an extended period of time, which usually cannot be matched by the psychiatrist or psychologist in clinical practice. Typically, the strength of the empirical approaches is their ecological validity (Martin et al., 1986). However, as in all such assessment procedures, it is clear that different raters such as mothers, fathers, teachers and clinicians may provide different ratings (Achenbach et al., 1987).

The CBCl has an impressive clinical and research history. It provides a normative basis for a variety of descriptive personality profiles for children aged 2-3, 4-5, 6-11, and 12-16 years, according to their parents' perspective. Broad-band profiling of internalizing and externalizing dimensions of behavior relate directly to the preventive mental health proposals of Strayhorn and Strain (1986). Narrow-band profiling utilizes eight different subscales each for boys and girls. In addition, the CBCl provides a gender and norm-referenced rating of the child's social competence.

Achenbach and McConaughy (1987) indicate that if empirically based assessment can standardize the identification of clinically relevant features of a child's

social-emotional development and group these into normative/developmental patterns, then there may be an improved basis for developing and testing theories.

The use of gender norms may be important to investigations into the social and emotional behaviors of preschool children with CD. The relevance of using gender based conceptualizations of developmental processes may be controversial, but there are considerable gaps in our knowledge of the relationships between gender and social-emotional problems. For example, normative research for the CBCl indicates that the "mean behavior problem scores for nonreferred boys and girls were virtually identical at all ages and those for referred children showed no consistent gender effects" (Achenbach & Edelbrock, 1981, p. 51). However, Eme's (1984) review of the literature on sex-role stereotypes and the epidemiology of psychopathology reveals a markedly greater male preponderance in the intellectual, behavioral, and pervasive developmental disorders and parity in the emotional disorders.

Parent Report and Parenting Stress Issues

Reliance on parent report for identification of a child's social-emotional difficulties does have its limitations (Wallander et al., 1988), which must be accounted for in research studies. Maternal depression, perception of spousal support, and recent life stresses have been identified often as factors that could confound the

validity of the parents' perception of their child. Some research studies have investigated these phenomena using the Parenting Stress Index (PSI) (Abidin, 1983) and the Child Behavior Checklist (Achenbach & Edelbrock, 1983).

Several of these studies reported positive relationships between ratings of psychiatric disturbance in children and maternal depression (Breen & Barkley, 1988; Webster-Stratton & Hammond, 1988). Webster-Stratton and Hammond (1988) suggests that "while an increased depression level may suggest that the parent is reporting her child to be more deviant than he or she actually is, it also serves as an important 'signal' to alert one to the fact that this parent is highly stressed about her parenting role and relationship with her child" (p. 312). Home observation of these depressed mothers indicated that they tended to verbally criticize and spank their children more often than nondepressed mothers (Webster-Stratton & Hammond, 1988, p. 311). Marital conflict and lack of spousal support were often cited as related to maternal reports of conduct problems and parenting stresses in families of children with special needs (Bristol, Gallagher, & Schopler, 1988; Jouriles, Pfiffner, & O'Leary, 1988). Breen and Barkley (1988) conclude:

> recent studies suggest that relations among such variables as parental depression and marital discord, child characteristics, and ratings of child deviance are complex and probably not unidirectional in effects. It seems likely that both the child's actual behavioral characteristics as well as parental and family

> functioning contribute unique effects to parental perceptions of child deviance and stress in caretaking. (p. 277)

Summary of Indirect Assessment Issues

Valid, reliable, and cost-effective means exist to provide the necessary diagnostic information related to cognitive and social-emotional development and to family/demographic factors. These measures involve indirect assessment using the parents' knowledge of and experience with their child in a wide variety of circumstances. It is appropriate to involve parents in this identification process as they are essential to the planning and provision of treatment services. The widespread use of such measures may help to standardize the identification of clinically relevant factors related to children's development.

Social-emotional Characteristics of Children with Communication Disorders

This section reviews clinical and research knowledge related to risk for psychiatric disorder, characteristic social-emotional problems, and family functioning for a variety of subgroups of children with CD. Particular emphasis is placed on applied research studies that used the Child Behavior Checklist with children who had SLI.

Associations between Communication and Social-emotional Disorders

Social interaction is a vehicle for the language learning process, and language plays a mediator role in

emerging social-emotional development of young children (Hassibi & Breuer, 1980). It is reasonable to expect that a disruption in one of these developmental areas would affect the other. Van Kleeck and Richardson (1986) provide descriptions of the disruptive impact that a language impairment can have on a child's personality and family/peer relationships in terms of developmental processes. These descriptions include the implications of these disruptions for clinical practice. Baker and Cantwell (1987a) indicate that their research data provides support for the hypothesis that speech and language factors play a primary role in the genesis of psychiatric disorders. "It appears that communication difficulties produce a variety of psychosocial deficits, which in turn may be mechanisms for the development of psychiatric disorders" (p. 195).

With consideration to the interrelationships between communication and social-emotional development, Laughton and Hasenstab (1986) hypothesize that communication deficits would accompany more severe behavior problems. Similarly, relationships between CD and social-emotional development have also been described for children initially diagnosed as having psychiatric disorders (Hassibi & Breuer, 1980).

Given that interactions between linguistic, cognitive, and social-emotional development provide the basis for pragmatic development (Bates, 1976), one may assume that deficits in any of these areas are also reflected in

pragmatic disabilities. Baltaxe and Simmons (1988) review the limited amount of information available on the pragmatic development of children with emotional disorders. They offer that this is a rich area for exploration of developmental processes with many applications to the mental health and CD fields.

There is a long history of efforts to describe the social and emotional problems and adjustments of children with CD beginning with McCready (1926) and Orton (1937). A number of early clinical studies report that children with CD have a high rate of psychiatric disturbance (Butler, Peckman & Sheridan, 1973; Griffiths, 1969; Ingram, 1959). However, the data in these studies is mostly of a descriptive/clinical nature.

One notable exception to the type of limited research studies indicated above is an epidemiological study of a sample of 705 3-year-old children from a London suburb (Richman, Stevenson & Graham, 1975). They report the prevalence of behavior problems in the whole population to be 14.3%. However, for children at risk for language delay the prevalence rate for significant behavior problems was 59.1%. The rate for evidence of expressive language delay in the total population was only 3.1%, but in the behavior problem group the "at risk" rate was 12.9%. Thus, there was a strong association between language problems and behavior problems in this population study. Richman, Stevenson, and

Graham (1982) report on the longitudinal aspects of the same study at age 8 which continued to indicate strong associations between language delays, the development of psychopathology, and future school learning problems.

The Risk for Psychiatric Disorder of Children with Communication Disorders

Although the language impaired child is not by definition psychotic or autistic, the proportion of language impaired children with significant emotional problems has recently been recognized to be substantial. The figures of clinical reports often vary from 30% (Ingram, 1959) to 70% (de Ajuriaguera et al, 1976). Early literature reviews regarding social-emotional behavior of children with CD, and particularly of those with language difficulties, suggest that they tend to be at greater risk for psychiatric problems than the general population (Cantwell & Baker, 1977, Chess & Rosenberg, 1974).

Generally, there was only limited case history information available in research studies, until a series of psychiatric investigations by Baker and Cantwell (1982a, 1982b) on children referred to a speech and language clinic solely for assessment and treatment of their CD. Baker and Cantwell (1987b) report on a four-to five-year follow-up of this earlier study involving a representative half of the original 600 children. Initially 44% of the children were diagnosed as having at least one psychiatric disorder,

whereas on follow-up 60% were so diagnosed. The rates for psychiatric disorder were four to five times higher at each assessment period than would be expected in the general population of children.

Baker and Cantwell (1987b) report differential rates for boys and girls, both initially and on follow-up, which suggest that girls with speech and language impairments have considerably higher rates of psychiatric disorder than are typically found in girls in the general population. They contend that since psychiatric disorders are more common in boys than girls generally, that "'protective factors' against the development of psychiatric disorder which may exist in young girls relative to boys are inoperative when a speech-language handicap is present" (p. 550). With consideration to the other types of CD children may have, Baker and Cantwell (1982a, 1982b) also report that 29% of the children who only had speech problems were found to have a psychiatric disorder, which is considerably higher than the expected 10-15% typically reported for the general population.

Although the Baker and Cantwell studies (1982a, 1982b) are often cited in the literature, a number of difficulties in these studies severely limit the applicability of the data and conclusions to preschool children with CD. One concern is the grouping of the data across the entire age spectrum, as the children ranged from 2.0 to 15.9 years.

Also, significant confusion arises with the indiscriminate inclusion of data for children who had speech and/or language problems and other developmental disorders including mental retardation, hearing impairments and/or cerebral palsy. Approximately 5% percent of the children came from bilingual home environments. These factors reflect common research problems identified earlier related to the need to effectively account for the inherent heterogeneity of children with CD.

A recent epidemiological study by Beitchman and colleagues (Beitchman et al., 1986) did account for the inherent heterogeneity of children with CD quite well. They found that with consideration to the Conners Rating Scale, the Child Behavior Checklist, and/or ratings by psychiatrists, girls with speech and/or language impairments were consistently at greater risk for having clinically significant levels of social-emotional problems than were boys. "The percentage of girls rated in the clinical range varied from 37.0% (teachers), to 44.9% (parents) and to 61% for psychiatrists), while figures for the boys were 23.0% (teachers), to 25.0% (parents) and to 42.2% for psychiatrists" (p. 528). This finding related to a greater risk for girls seems consistent with that found in the Baker and Cantwell (1987b) study described above. Beitchman et al. (1986) suggest that "it is conceivable that girls have a higher threshold than do boys for language impairment, hence

showing the more severe effects of that impairment - including being more susceptible to psychiatric problems" (p. 533).

This finding of greater risk for girls than boys for having significant social-emotional problems as determined by parent ratings on the CBCl is somewhat confounded by a later report that indicates differences in relative rates in terms of whether it was mothers or fathers doing the rating. Thus, Beitchman, Hood, & Inglis (1990) report that CBCl ratings by mothers placed girls with CD at twice the risk for clinically significant levels of behavior problems compared with the control group, but their ratings for boys did not yield any significant differences. Fathers' CBCl ratings for girls were consistent with the mothers', but the ratings for boys placed them at five times the risk than the control group.

Although there was a greater incidence of having a psychiatric diagnosis for each of the three groups with communication problems (poor articulation, poor auditory comprehension, and low overall) than the high overall group (normal control) based on random subsamples, the differences were mostly related to attention-deficit hyperactivity disorder (ADHD) (Beitchman, Hood, Rochon and Peterson, 1989). However, the children in the auditory comprehension and poor articulation groups were much more similar to the high overall group in terms of ratings of "no" disorder,

while only 23% of the low overall group did not have a psychiatric disorder.

Characteristic Social-emotional Problems of Children with Communication Disorders in General

Weiss and Lillywhite (1981) suggest that although the behavior disorders of children with CD may well be related to their presumed organic dysfunction, there is probably also a strong experiential component to the relevant developmental processes. These children have difficulties in expressing themselves clearly or completely and in understanding what others tell them and/or what others expect of them. They want to communicate and socialize with others and probably experience considerable stress involving uncertainty, frustration, and maybe anger. Given their verbal and nonverbal reasoning abilities, they are acutely aware of the difficulties but do not have the skills to be more effective in their communication. Parents experience these stresses too, which at times lead to feelings of defeat for both parent and child. Johnson (1986) suggests that such stresses may play an important role in the development of various types of health and adjustment problems.

There seems to be no characteristic profile of social-emotional behaviors that describes the population of children with CD. From their review of the literature, Cantwell and Baker (1977) indicate that children with CD

have the same range of psychiatric problems found at similar ages in the population at large. Mattison, Cantwell, and Baker (1982) did not find a simple behavior problem characterization of the children in any of their three linguistic groupings (speech only, speech and language, and language only), possibly because of the confusions in their study as indicated above.

In keeping with the strategy to account for the inherent heterogeneity of children with CD, the next section describes research findings related to children with particular language, articulation, voice, and/or fluency disorders.

Social-emotional Problems of Children
With Language Impairments

Researchers have attempted to identify characteristic patterns of social-emotional behavior and/or psychiatric disorders for children with language impairments. The Newcastle Child Development Study (Fundudis et al., 1979) describes the later behavioral development (at age 7) of children, who at the age of 3 years were identified as having delayed language skills, as compared with their peers. Significant differences in terms of withdrawal, introversion, attention span, motor activity, level of confidence, and presence of psychiatric disorder were still identified after the four years.

Given the findings that serious language impairments are often long term in nature, determination of the social competence of young children with language impairments is important. The report on the longitudinal study by Paul, Cohen, and Caparulo (1983) on 28 children with severe developmental disorders of language concluded that serious language impairments persisted in 88% of the subjects followed. Among these children, those with better receptive than expressive language were more likely to make progress in their social relations.

Kretschmer and Kretschmer (1982) question whether children with language impairments are as socially competent as chronically same-aged peers. Fey and Leonard (1983) state that there is sufficient evidence to suggest that "relative to same-age normal language children, SLI children are not generally socially impaired, but may be markedly deficient as the initiators of social-conversational interaction" (p. 66). They suggest that as deficits in conversational participation may covary with types of language impairments, there needs to be further investigation of these proposed relationships.

Fey and Leonard (1983) conclude that:

> Ultimately, how a child performs in a conversational context will depend on the social, cognitive and linguistic abilities which the child brings to the social situation. Given that children with specific language impairments, by virtue of their age, have had greater experience in the social world than younger normal language children with similar structural skills and often show cognitive abilities in advance of these

> younger children (Camarata, Newhoff, and Rugg, 1981; Kamhi, 1981), it seems reasonable that they may be expected to perform at higher levels than normal language children at similar stages of syntactic development, at least on those communication tasks that do not severely tax areas of language form. (p. 77)

(ADHD) has been identified as a common characteristic in children with language impairments. In a longitudinal study of 28 children with severe developmental disorders of language (Paul et al., 1983), research findings indicated that despite intensive special education, problems with the modulation of activity and attention persisted. In a recent epidemiological study, 59% percent of a subsample (n=22) of the low overall group (n=87) were identified by psychiatrists as having ADHD (Beitchman, Hood, Rochon & Peterson, 1989). In an associated article a subsample of the boys (n=29) and girls (n=16) who had language problems (the low overall group and the poor comprehension group) were diagnosed with ADHD at the rates of 34% and 37.5% respectively. These rates were considerably higher than the rates for a normal control group (Beitchman et al., 1990).

Cunningham et al. (1985) found a strong tendency toward a lack of social initiative in children based on their observations of parent-child interaction. However, they conclude that although parents of language-delayed children reported a significantly higher overall score on the Behar-Stringfield Questionnaire (Behar & Stringfield, 1974), the children's scores on the individual hyperactive-distractible, anxious, and hostile aggressive

factors did not differ significantly from those of normal children. These results are consistent with other epidemiological and clinical studies finding an increased prevalence of psychiatric difficulties, but inconsistent in terms of ADHD.

Although children with language impairments generally had a tendency toward lack of initiation and ADHD in most of the studies reviewed above, there is still controversy as to whether there is a unique pattern of symptoms among language-delayed children. Characteristic behaviors may covary with type of CD or possibly with other environmental influences.

Family Relationships of Some Children With Language Impairments

The studies cited thus far focus on the affective growth and emotional health of language impaired children, but what of the social world in which they live? Physical neglect, inconsistent maternal social responsiveness, and infrequent peer social play opportunities have been implicated in the home environments of children who develop CD (Cunningham et al., 1985). Both Richman, Stevenson, and Graham 1982) and Snow (1984) identify parental history of psychopathology as being an important variable. Richman and Stevenson (1977) found a higher prevalence of parental psychiatric problems, financial and health worries and

familial isolation among the families of language impaired children than are reported for the population at large.

In a recent epidemiological study psychosocial stressors were identified in over 62% of the children with speech and/or language problems but in only 28% of the normal control group (Beitchman et al., 1986). These stresses included such events as marital separation, moving, and/or foster home placement. Although the actual role for the psychosocial stressors was not identified, the authors make reference to multiple stresses functioning in a "cumulative or potentiating way" (p. 534). Other factors they investigated such as marital status, social class, occupational status, education of parents, family size, and birth order did not differentiate children with CD from their peers. It was not reported if there were differences in any of these other variables between the three groups of children who had CD.

In terms of parent-child relationships at home, Cunningham et al. (1985) found that mothers of children with language delays reported a significantly greater number of problems on the Preschool Behavior Questionnaire (PBQ) (Behar & Stringfield, 1974) than did mothers of a normal sample. The children with language delays who were described as more problematic on the PBQ proved to be less compliant in both free-play and work activities. Significant group by age interactions indicated that mothers

of older children with language delays repeated more commands in the clinic and at home than did mothers of older normal children (Cunningham et al., 1985, p. 1395). Presumably, mothers' behavior is also shaped by their experiences coping with their children's CD.

A detailed description of some home environments is provided by Wulbert, Inglis, Kriegsman, and Mills (1975) based on research with the Caldwell Inventory of Home Stimulation (HOME). They found that HOME scores for the language impaired children were significantly lower than normal on all subscales but one, that is, organization of physical and temporal environment. The authors explain that mothers of the language impaired children seemed to be conscientious but critical parents who viewed their children as objects of frustration. Some mothers lead parallel lives, providing for their children's physical needs but seldom interacting.

Chess and Rosenberg (1974) describe the negative impact of such family relationships as follows:

> This growing picture of emotional and social disturbance in the language disordered child is disquieting. Whatever its origins, ie. communication failure, organicity, cognitive and/or perceptual dysfunctions, its consequences seem clear. A child who avoids his parents and peers, who is viewed as difficult and different, and in whom parents find little interactive pleasure must certainly experience crucial deficits in language learning opportunities. (p. 33)

Wulbert et al. (1975) stress the reciprocal nature of these poor interaction patterns, pointing to the child's as well

as to the parents' role, but shared responsibility does not mitigate the social facts.

Social-emotional Characteristics of Children With Speech, Fluency, or Voice Disorders

A number of research studies have investigated the social-emotional characteristics of children with other CD. These studies may hold relevance for studies of children who have SLI in that such children often have other communication problems in addition to those related to language. Also in this regard, Shriberg, Kwiatowski, Best, Henger, and Terseli-Weber (1986) conclude that many, if not most, speech-delayed children have some degree of language involvement. Samuels (1981) describes the negative emotional reactions people tend to have to children's speech impairments and the emotional problems that such children often have. Several review studies describe associations of social-emotional problems/disorders with dysfluency (Andrews, Craig, & Feyer, 1983) or voice problems (Wilson, 1987).

Schloss (1984) reviewed a variety of other early studies that focused specifically on the relationship between social-emotional development and speech disorders (not involving language). The reviewed studies were criticized as having a number of significant design flaws and limited sample sizes. Even though characteristic patterns of social-emotional disorders were not identified,

several findings should be noted. Articulation deficits have been associated with high anxiety and tension levels and with emotional disturbance (Butler, 1965; Soloman, 1961; Trapp & Evans 1960). Speech disordered children are often socially isolated from their peers (Lerea & Ward, 1966; Perrin, 1954). Children who stutter have been found to have a greater frequency of nervousness and maladjustment than nonstutterers (Moncur, 1955). A positive relationship between the frequency of stuttering episodes and the discrepancy between the perceived status of self and of the listener has been identified also (Sheehan, Hadley & Gould, 1967).

Shriberg et al. (1986) indicates that many of their children with speech problems also had some degree of language involvement. Behaviors reported for their sample included shyness, speech avoidance, immaturity, and need for external reinforcement among several others. However, they had difficulty interpreting their findings because of the absence of normative reference points for the behavior rating scale they used.

Rutter (1972) indicates that children with speech problems are more likely to have limited or unsatisfactory peer interactions and to be easily frustrated. Rutter indicates that some of the reasons for these difficulties are as follows:

> the effects of associated brain dysfunction (when this is present); the effects of teasing and rejection by

> other children arising from the child's speech difficulties; the lack of social integration and the effects of this on the child's self image; the effects of poor communication on social relationships; and the effects of educational difficulties. (p. 707)

Given the foregoing it is likely that speech, fluency and/or voice difficulties reciprocally and negatively impact on the child's educational progress and social-emotional development (Verville, 1985), as well as with children who have language impairments.

CBCl Research and Preschoolers With Specific Language Impairments

In the foregoing literature review regarding the psychological characteristics of children with CD, the findings of several studies suggest that there is considerable risk for such children having clinically significant rates of social-emotional problems, with gender differences being found as well. The studies often identify such children as having a tendency toward limited initiation with others and attention-deficit hyperactivity disorders, although a wider range of behaviors reflecting both emotional problem and conduct disorder domains are described. Characteristic social-emotional profiles relate to particular types of CD were not identified.

However, many of the studies have serious limitations which make interpretation difficult. The subject sample size is often quite small and limited to poorly identified and/or inappropriately classified clinical samples, often

without any normative reference group. The descriptions of the behavior problems are usually developed from scales that are not validated for the purpose of determining characteristic profiles. Such problems confound the determination of associations between communication and social-emotional disorders and increase the difficulties in interpretation, generalization, and replication.

With consideration of the foregoing concerns in mind, this section describes the findings of four recent studies that used the Child Behavior Checklist (CBCl) (Achenbach & Edelbrock, 1983) with children who generally fit the criteria for SLI.

In the literature review above, the epidemiological study by Beitchman, Hood, Rochon, Peterson, Mantini, and Majumber (1989) was given as an example of comprehensive assessment, description, and classification of children to account for the inherent heterogeneity of developmental variables in children with CD. Besides identifying prevalence rates of children with CD, this study provided considerable investigation of relationships between CD subtypes and characteristic social-emotional profiles, risk estimates for psychiatric disorder, social competence problems, and family/demographic relationships. The researchers classified their sample of children with significant CD in terms of a poor articulation subgroup, poor auditory comprehension subgroup, and a low overall

subgroup. Of particular value to this current study is the identification of a low overall group that corresponds to a SLI sample. It is noted that 25% of this group failed an audiometric test which suggests that some of their communication problems may have been confounded by ongoing hearing problems. These children were compared with a matched sample of children without significant CD called the high overall group.

In terms of the CBCl scores, the mothers' (but not Fathers') ratings indicated significantly lower social competence T scores and higher externalizing domain T scores for the low overall group compared with the high overall group (Beitchman, Hood, Rochon, & Peterson, 1989). They indicate that in terms of narrow-band scores, boys in the low overall group, as well as the other two CD groups, were found to have higher immature scale ratings than the high overall group. Girls in the low overall group had higher ratings on the sex problems scale than the high overall group.

Based on psychiatrists' ratings for a random subsample of boys and girls together, the low overall group was identified as having inadequate/immature, aggressive, and hyperkinetic problems significantly more often than the high overall group (Beitchman, Hood, Rochon and Peterson, 1989). Fifty-nine percent of this subsample of the low overall group had a identifiable psychiatric disorder, predominantly

attention-deficit hyperactivity disorder. This subsample of the low overall group also received significantly higher ratings of severity of psychiatric disorder than the high overall or poor articulation groups. Beitchman, Hood, Rochon and Peterson (1989) conclude that "the rate of behavioral disturbance is greatest when the language delay is most general and most severe" (p. 122), that is for the low overall group as opposed to those children who only had articulation problems or auditory comprehension problems.

Beitchman, Hood, Rochon, and Peterson (1989) characterize the low overall group, the one most like children with SLI, as developmentally immature because of their communication skill delays, lower IQ, poor visual motor abilities, and possible neurological signs. They suggest that "developmental immaturity antecedes or is coincident with both the behavioral disorder and the language disorder for the low overall group" (p. 122). They conceptualize the relationships between these developmental factors as follows:

> Developmental immaturity may be the common link between language delay and ADHD. The more general the language delay, the more likely there is underlying immaturity and the greater risk of ADHD: the more specific or narrow the language impairment, the less the likelihood of immaturity and the lower the probability of ADHD. Neurodevelopmental immaturity is conceptualized as only one of several possible pathways to hyperactivity. ... In general terms, therefore, with poor linguistic performance across a broad range of measures, including articulation, expression, auditory comprehension, and auditory memory, the risk for psychiatric disorder increases. (p. 122, 123)

Tallal et al. (1989) used the CBCl as the basis for describing the social-emotional characteristics of a clinical sample of 56 boys and 25 girls. This sample was comprised of four-year-old children with SLI who were matched to a normal sample. The goal of this study was to investigate the relationships between behavior problem status, language dysfunction, and neuropsychological problems. Tallal et al. (1989) found that there were significant differences between total behavior problem, social competence, and internalizing T scores on the Child Behavior Checklist between the SLI and the matched normal group. However, only five of the 56 boys with SLI had scores in the clinically significant range, while none of the children with normal speech and language development had such a score. Thus, there were no significant differences between the two groups in terms of having total behavior problem T scores in the clinically significant range.

The children with SLI were found to have significantly higher scores on the Immaturity Subscale (boys) and the Social Withdrawal Subscale (girls). When the actual items of these scales were reviewed, it was noted that they included clumsy, confused, can't concentrate, speech problems, accident prone, stares blankly, slow moving, won't talk, and twitches. The SLI group also performed poorly compared with the normal group on follow-up assessment using a

neuropsychological battery involving non-verbal perceptual and motor tasks.

Tallal et al. (1989) interpret their data as indicating that children with SLI are characterized more by neuropsychological deficits than by behavior problems. They acknowledge that there was considerable within group variability on dimensions that were related to social-emotional behavior. They also indicate that certain behavior profiles might be characteristic of different patterns of speech and language impairment, but these relationships were not investigated in the study. Overall they contend that four-year-old children with SLI are not at greater risk of having clinically significant rates of behavior problems than their peers.

Zubrick (1984) used a considerable portion of the CBCl in a rating scale derived by factor analysis to study 4- to 7-year-old children with SLI. This study determined that the children were reported to have significantly more behavioral problems than the nonreferred control group. Unfortunately, results were confounded by the fact that 30% of the rating scale contained speech and language items rather than social-emotional behaviors, maybe accounting for the differences as reported. Given that Zubrick did not use the standardized CBCl, the results are not easily generalized to other research samples that have used the CBCl.

Aram et al. (1984) reported on a 10-year follow-up study of a clinical sample of preschoolers with language impairments. Of 16 adolescents who were not being educated in special classes for the educable handicapped, there were high rates of persistent language and academic problems. Parents of these adolescents also rated them on the Child Behavior Checklist as having significantly greater numbers of behavior problems and to be less socially competent than their age peers. Having a language impairment as a preschooler may have long-term significance for the child and family in terms of a variety of psychological difficulties, even if these difficulties are not readily apparent during the preschool years.

Summary of the Psychological Characteristics of Children with Communication Disorders

Several studies suggest that there is considerable risk that children with CD will have clinically significant rates of social-emotional problems, with gender differences being implicated (Baker & Cantwell, 1987b; Beitchman et al., 1986). The studies generally identify such children as having a tendency toward limited initiation of social-communication and having attention deficit-hyperactivity disorders, although a wider range of behaviors reflecting both emotional problem and conduct disorder domains were also identified often. Characteristic

social-emotional profiles related to particular types of CD were not identified.

Preschool children with SLI often have serious behavior problems and inadequate social competence that put considerable stress on speech-language treatment progress, peer interaction, family interaction, and self-concept development. However, the two studies that used the CBCl showed mixed results in terms of whether such children have significantly more social-emotional problems than their peers for total, internalizing, or externalizing T scores. There was agreement that they were significantly less socially competent than their peers (Beitchman, Hood, Rochon, & Peterson, 1989; Tallal et al., 1989).

There was considerable evidence that preschool children with SLI were diagnosed as having a psychiatric disorder (typically ADHD) much more often than their peers. Although the discrepancies in the findings reported above may reflect different samples of a heterogeneous population, it was clear that only some preschoolers with SLI had clinically significant levels of behavior problems or psychiatric diagnoses. It was not clear what processes or factors are implicated in the development of children with significant social-emotional problems.

Beitchman (1985) suggests that the difficulties children with CD generally experience in their ongoing attempts to communicate are probably insufficient alone to

account for the increased psychiatric risk, although the communication impairment probably has considerable implications for how the social-emotional problems are manifested at the level of the individual. Fey (1986) hypothesizes that the more areas of communication skill development that are deficient and/or the greater the severity of such deficits, the greater is the likelihood that the child will also have significant psychological problems. Beitchman, Hood, Rochon, and Peterson (1989) provide some evidence in support of such a hypothesis, but they indicate that the relationships between the number, type, and severity of cognitive deficits and the social-emotional problems of the children are not well known. Unfortunately, such research studies generally have not accounted for the type and severity of the various communication deficits that children with SLI experience. Finally, Beitchman et al. (1990) indicate that although it is possible the CD of these children are not causally related to psychiatric disorder, the communication problems may be related to neurodevelopmental immaturity or to some cognitive or emotional factor.

Beitchman et al. (1990) found that the psychosocial/demographic factors they studied did not differentiate between the CD children with or without psychiatric problems, although they acknowledge that psychosocial features are probably related to psychiatric

illness in children with normal language skills. It is not reported whether this lack of differentiation was also identified for the low overall group compared with normal peers. However, there may be other family/demographic variables that also need to be included in studies of the relationships of communication and social-emotional disorders.

Chapter III

Goals of the Research Project

In the previous chapter the findings of several studies suggest that there is considerable risk that children with CD will have clinically significant rates of social-emotional problems. Girls are reported to be at relatively greater risk than boys (Baker & Cantwell, 1987b; Beitchman et al., 1986). The studies generally identified such children as having a tendency toward limited initiation of social-communication and having attention-deficit hyperactivity disorders, although often a wider range of behaviors reflecting both emotional problem and conduct disorder domains were also identified.

Although several researchers propose that there could be characteristic patterns of social-emotional behaviors associated with particular profiles of CD, such patterns have not yet been identified. It is suggested that consideration of styles of conversational participation and/or severity of the other communication deficits of the children might lead to relevant CD profiles being identified for this purpose (Fey, 1986; Zubrick, 1984).

Fey (1986) hypothesizes that the more areas of communication skill development that are deficient and/or the greater the severity of such deficits, the greater is the likelihood that the child will also have significant psychological problems. Beitchman, Hood, Rochon, and

Peterson (1989) report findings that could support this hypothesis. However, investigation of the relationships between the number, type, and severity of communication deficits and the social-emotional problems of children with SLI has barely begun.

The two studies that used the Child Behavior Checklist report mixed findings regarding mothers' ratings of total number of behavior problems and of internalizing or externalizing domain scores for preschool children with SLI compared with their peers. However there was agreement that children with SLI had greater social competence problems than their peers (Beitchman, Hood, Rochon, & Peterson, 1989; Tallal et al., 1989). Psychiatric ratings indicated a significantly higher frequency and severity of psychiatric diagnosis (primarily ADHD) for preschool children with SLI than their peers (Beitchman, Hood, Rochon, & Peterson, 1989).

Only some preschool children with SLI have serious behavior problems and/or inadequate social competence. However, such problems put considerable stress on speech-language treatment progress, peer interaction, family interaction, and/or self-concept development. It is not clear what the relevant processes or factors are that relate to the differential presence of such psychological problems, but given the seriousness of the situation it is important to find the answers.

There are serious limitations in many of the studies reviewed that made interpretation of the various findings difficult. The subject sample size was often small and limited to poorly identified and/or inappropriately classified clinical samples, often with no normative reference group. Descriptions of the behavior problems generally were not developed from scales validated for the purpose of determining characteristic profiles. Such procedural problems confound the determination of associations between communication and social-emotional disorders and increase the difficulties in interpretation, generalization, and replication.

To properly investigate the issues outlined above, it is necessary to account for the inherent heterogeneity on a wide variety of parameters of children with CD. Researchers recommend providing more comprehensive assessment and accurate classification of the communication deficits in terms of the range and severity of articulatory/phonological, voice, fluency, language, and pragmatic parameters such as conversational participation. In addition to communication skills, the child must be evaluated for cognitive and social-emotional dysfunction. Finally, description of a wide variety of family/demographic information should be included, as experiential factors may have a reciprocal impact on both the CD and social-emotional problems of these young children. It is proposed that the

nature of the interrelationships between communication, social-emotional, and family variables can be more systematically investigated with such comprehensive identification of subject characteristics. Finally, it is suggested that focusing on identifiable subgroups of preschool children with SLI may help to increase the generalizability of findings.

In general, the research problem involves adding to our current knowledge regarding the social-emotional characteristics of preschool children with SLI by investigating the relationships between CD profiles (type and severity of communication deficits), empirically derived social-emotional profiles, and relevant family/demographic factors. In addition, information from various parent report measures and speech-language pathologist classification procedures are used to identify potential risk factors which predict the severity of the CD, number of behavior problems, and/or social competence problems. Research and clinical implications of these findings are described for the purpose of developing a more effective and prevention oriented public health service delivery system.

The following research elements will be investigated with a sample of preschool children who have been assessed as having clinically significant SLI by speech-language pathologists in the public health system.

Communication Disorder Characteristics

The speech-language pathologists' ratings based on the adapted Severity Rating Scale are used to identify meaningful CD profiles.

1a. These profiles are used to group the children in such a way that the type and severity of their communication deficits is accounted for.

1b. The conversational participation ratings provided by both the parent and speech-language pathologist are used to identify meaningful conversational participation profiles. These profiles are used in order to group the children in terms of a characteristic style of interaction.

1c. The degree of overall consistency between the parent's and speech-language pathologist's ratings of conversational participation is investigated.

1d. The relationships between the CD profiles and the conversational participation profiles is investigated.

Social-emotional Characteristics

The clinical parameters from the Child Behavior Checklist are used to describe the type, severity, and clinical significance of both behavior and social competence problems of the sample as categorized by gender, CD (1a), or conversational participation groupings (1b).

2a. The percentage of children with clinically significant T scores from both the behavior problem and social

competence scales are compared with the clinical and nonclinical samples of the normative research for the Child Behavior Checklist in order to investigate presence of risk for significant social-emotional problems.

2b. The scores from the CBCl are used to determine what social-emotional behaviors characterize this sample.

Relationships Between Communication Disorder and Social-emotional Profiles

Hypotheses related to relationships between each of the CD profiles (1a) and conversational participation profiles (1b) and the behavior and social competence problems (2a) are investigated.

3a. It is hypothesized that as the severity of communication disorder increases, the total behavior problem, internalizing, and externalizing T scores on the CBCl will increase and the social competence T score on the CBCl will decrease;

3b. It is hypothesized that children with speech and language problems will have significantly higher total behavior problem, internalizing, and externalizing T scores and significantly lower social competence T scores than those with language problems only (controlling for the severity of the language problems).

Predicting Total Behavior Problem, Social Competence and Severity of Communication Disorder

Ratings from the demographic, family, communication, social-emotional, and/or other developmental information are used to identify potential risk factors relevant to the following:

4a. total behavior problem score (CBCl),

4b. total social competence score (CBCl),

4c. communication composite score from the adapted Severity Rating Scale as a measure of severity of CD of preschool children with SLI.

Chapter IV

Design

In order to overcome the procedural problems and confusion indicated earlier, a correlational research design was used with a large-sized and carefully prescribed clinical sample directed toward the overall goal of identifying the range and severity of social-emotional problems of identifiable subgroups of preschool children who have SLI. Correlational research is particularly appropriate for this purpose as ethical considerations preclude manipulation, and the primary goal of the study is to explore potential relationships. Such studies are sometimes known as correlational-predictive studies (Mauch & Birch, 1983) or functional relations studies (Grosof & Sardy, 1985).

First there was systematic identification of characteristic subgroups of these preschoolers in terms of the range and severity of their speech and language deficits. After these subgroups were described in terms of communication and social-emotional parameters, comparisons were made to identify relationships between characteristic CD profiles and psychological profiles of social-emotional functioning. Finally, there was investigation of potential risk factors in terms of demographic, family, communication, social-emotional, and other developmental variables as they

related to severity of behavior, social competence, and communication problems.

This project is an initial stage in a potential research process related to the use of field observation and clinical experience to generate an a priori performance model (Patterson, 1986). It is hoped such a model can be used in the future to hypothesize about processes involved in the complex relationships between the child's communication and social-emotional development within the context of family and peer interactions. Identification of these processes would have implications for provision of educational and treatment services.

Sample and Setting

Volunteer subject selection was based on parents providing written consent for the use of their child's assessment data (see Appendix 4), and thereafter completing a variety of questionnaires as described below. As the sample was obtained by parents volunteering their children, rather than random sampling methods from the population at large, it may not be representative of preschool children with SLI in the general population. However, in keeping with the call for comprehensive descriptions of research samples (Wickstrom et al., 1985), the following is a detailed description of the family, personal, and demographic characteristics of the sample for the purpose of

replication and to aid in determination of generalizability to other samples.

The clinical sample (n=67) included male and female children aged 4 years 0 months to 5 years, 11 months, and 30 days with SLI as identified by registered speech-language pathologists. Of the 67 children in the sample 49 (73%) were boys and 18 (27%) were girls. Forty-seven of the children were assessed by different speech and language pathologists at the Glenrose Rehabilitation Hospital in Edmonton. The other 20 children were each assessed by different speech-language pathologists at eight different Boards of Health located throughout the Public Health system in Alberta. Of the total sample 24 were receiving initial assessment services, whereas 43 were receiving review assessment services after at least six months of treatment services. T-test statistical analysis indicated that there were no significant differences ($p < .01$) between these two groups on parameters involving socioeconomic factors, parenting stresses, or number of children in family.

For those families who chose to participate, the speech-language pathologist used observation, interview, and formal assessment data to rate the individual child in terms of the specific criteria. The prime determination was that the child had at least a mild receptive and/or expressive language problem. The language problem was not related to an acquired disorder (i.e., from a known episode of brain

injury such as from a car accident), but rather related presumably to a long-term developmental problem. In this sample some children also had various levels of co-occurring articulation disorder, but no fluency or voice disorders. None of the children was thought to be autistic by the speech-language pathologists or the psychologists who provided the assessment data.

Forty-four of the 67 children had also received formal cognitive assessment administered by a chartered psychologist within the previous six months. Their overall cognitive development was estimated to be in the range of + 1 to - 1 standard deviations on formal intelligence tests: Stanford Binet Intelligence Scale, (3rd Revision) (Form L-M) (Terman & Merrill, 1973); Stanford-Binet Intelligence Scale: 4th Edition (Thorndike, Hagen, & Sattler, 1986); or McCarthy Scales of Children's Abilities (McCarthy, 1972). The other 23 children (including the 20 from the boards of health) had scores between the 0 and 19% level (within normal range) on the General Development scale of the Minnesota Child Development Inventory. None of the children had been provided with specific psychological treatment services at the time of rating.

There were several exclusion factors as is typical with classification of SLI. A child was excluded according to the following criteria, by utilizing the information provided by the parent (see Appendix 1) and by the

speech-language pathologist (see Appendix 3 and the relevant concomitant conditions definitions in Appendix 6):

1. there was no chronic sensorineural hearing impairment nor conductive hearing loss (of more than three months duration), although there may have been temporary decrements in acuity, such as is commonly found with otitis media, during some of the children's development;
2. there was no known motor skill problem that required treatment or adaptations;
3. there was no known neurological or medical problem, for example, children with abnormal vision (were included if corrected by using glasses), cerebral palsy, seizure disorder (requiring anticonvulsive medications), diabetes, cystic fibrosis, or severe asthma;
4. there were no multilingual or "English as a Second Language" histories.

Of the whole sample only seven children were reported to have had medical problems at birth; these problems were described by their parents as follows: tough birth, Caesarean section birth, cord around neck, twin, prematurity, and choked during birth. However, as medical records were not scrutinized, neither the accuracy nor significance of each of the foregoing was determined, nor was it determined whether other children in the sample had such difficulties that simply were unknown to the parents.

These difficulties were judged insufficient to exclude the seven children from the study.

Thirty-four (51%) of the children were reported to have had some medical problem after birth, during their infant and preschool years. The frequency with which a variety of problems were reported is presented in Figure 1. Seventeen of the children had two difficulties reported by their caregiver, predominantly frequent earaches and upper respiratory infections or tubes in ears. None of the children had three or more medical problems reported. None of the children was taking any type of medical prescription. These types of medical problems seem to be typical of children with speech and language difficulties.

Insert Figure 1 about here

Fifty-three children (79%) were reported to be in child care or educational placements in addition to being at home.

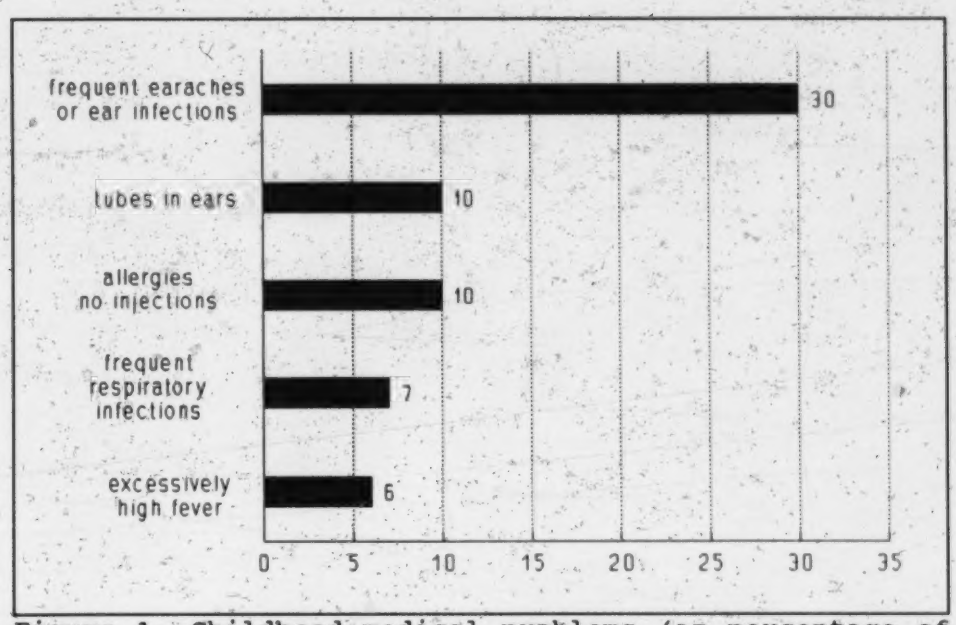

Figure 1. Childhood medical problems (as percentage of sample with the problem).

The percentage of children in the total sample placed in each setting is presented in Figure 2. It is noted that many children were in more than one setting at a time, such as a special needs preschool and kindergarten program. The other 21% of children were being cared for solely by their parents at home.

Insert Figure 2 about here

Other family related information was also reported by parents. The proportion of all the families classified according to the Hollingshead (1975) socioeconomic categories involving marital, educational and employment status is presented in Figure 3. The proportion of all the families classified according to mother's highest level of educational attainment is presented in Figure 4.

Insert Figures 3 and 4 about here

Figures 5 and 6 present the proportion of families classified according to marital status and the number of children in the family respectively. There is an average of approximately 2.5 children per family. The proportion of children in the sample classified according to their order of birth is presented in Figure 7.

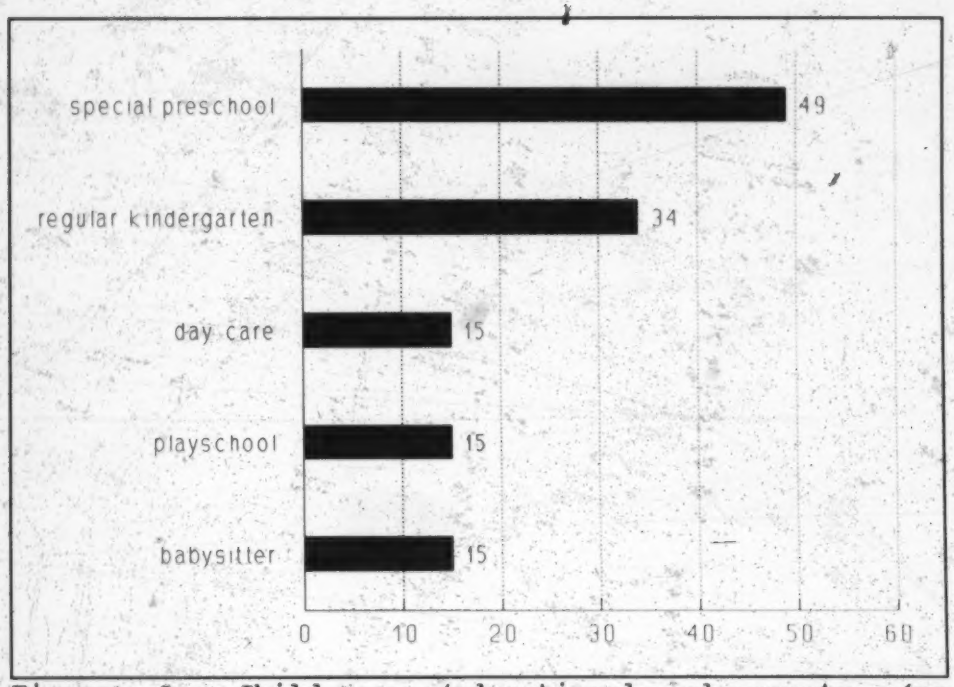

Figure 2. Child care/educational placements (as percentage of sample in each).

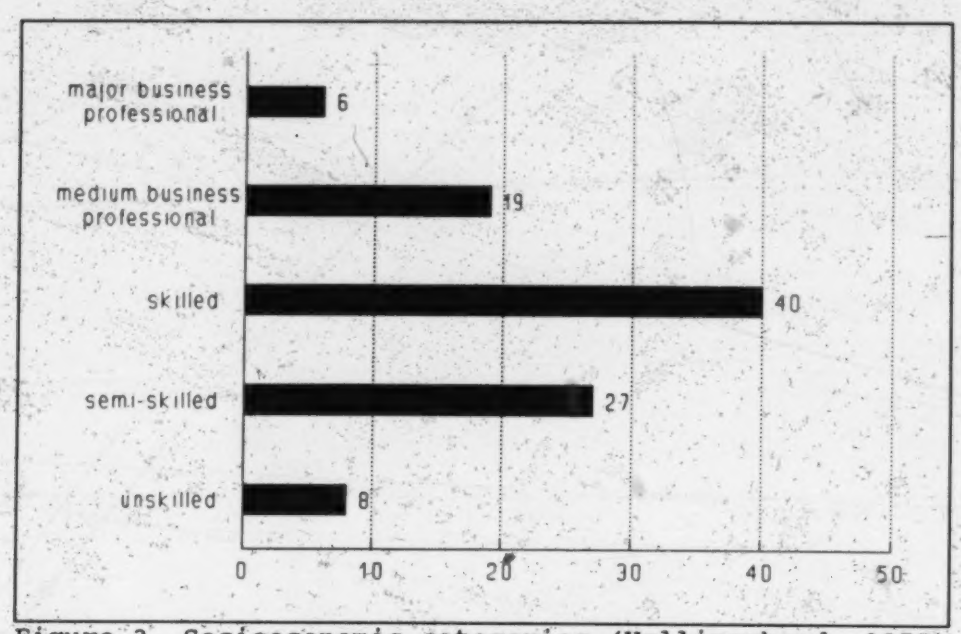

Figure 3. Socioeconomic categories (Hollingshead, 1975) (percentage of sample). Adapted

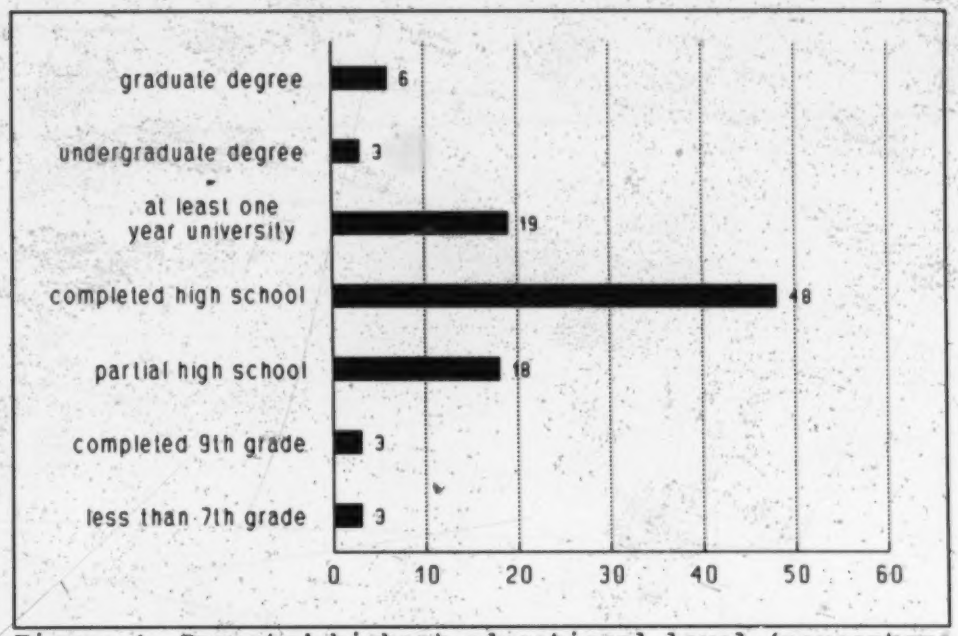

Figure 4. Parents' highest educational level (percentage of sample).

Insert Figures 5, 6 and 7 about here

Seven children (10%) had siblings who also had developmental problems according to parent report. As such, 4 siblings had speech and/or language problems, of which two also had school learning difficulties. In addition there were three siblings who each had a physical disability, developmental delay or attention problem respectively. The parents' report must be viewed with caution however, as many of the siblings were probably too young to be showing many symptoms of developmental problems yet.

The frequency with which parents' reported their own history of developmental disorders is presented in Figure 8. It was noted that parents of 10 children reported 2 or more concerns.

Insert Figure 8 about here

Finally, parents were given questions related to three domains of parenting stresses from Form 6 of the Parenting Stress Index (Abidin, 1983; Loyd & Abidin, 1985). Sixteen percent of the sample reached clinically significant levels of stress (greater than the 90th percentile) on the Spousal Support domain and 6% on the Maternal Depression domain, but no clinically significant ratings were obtained on the Life

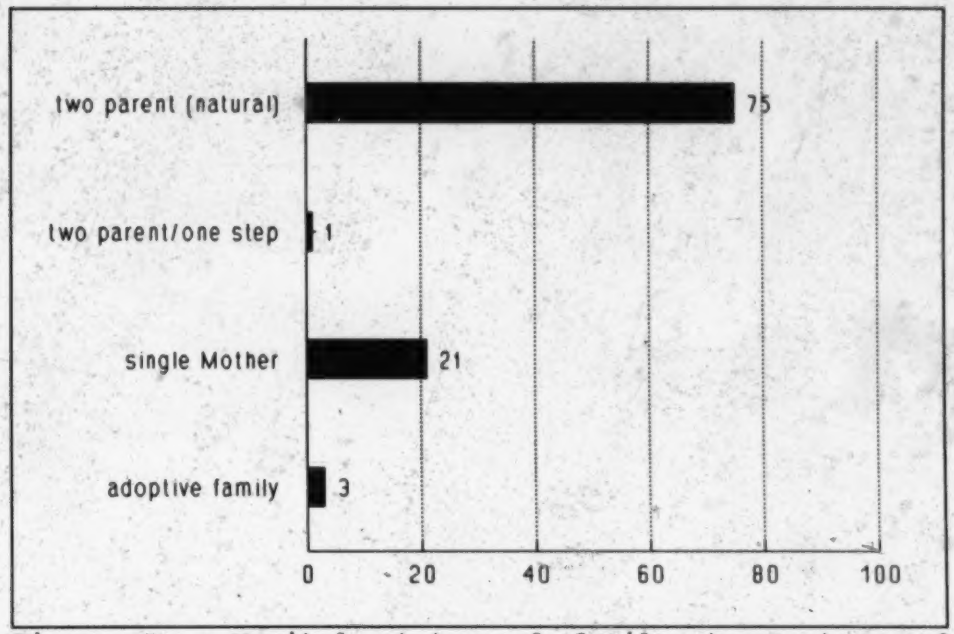

Figure 5. Marital status of family (percentage of sample).

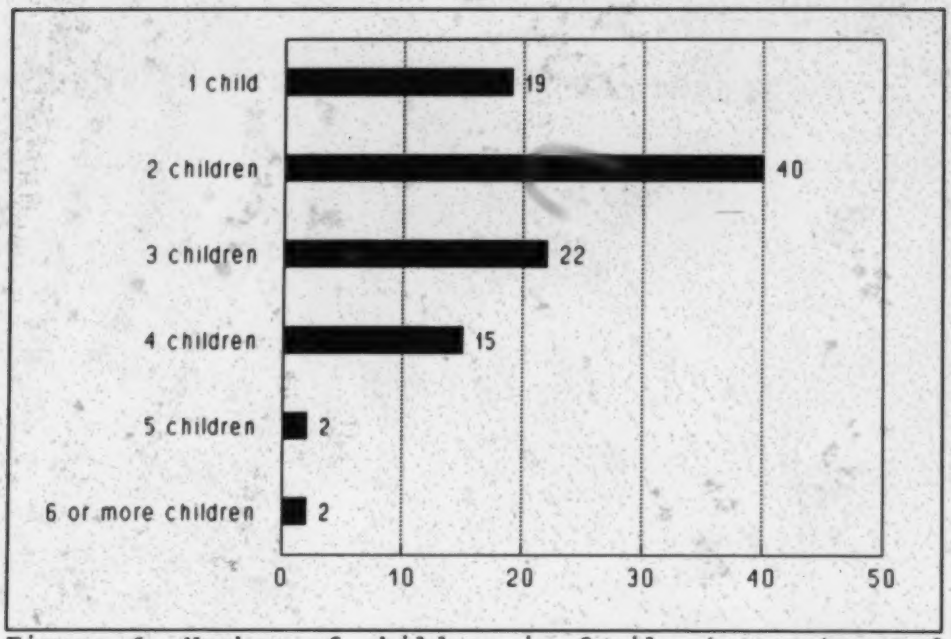

Figure 6. Number of children in family (percentage of sample).

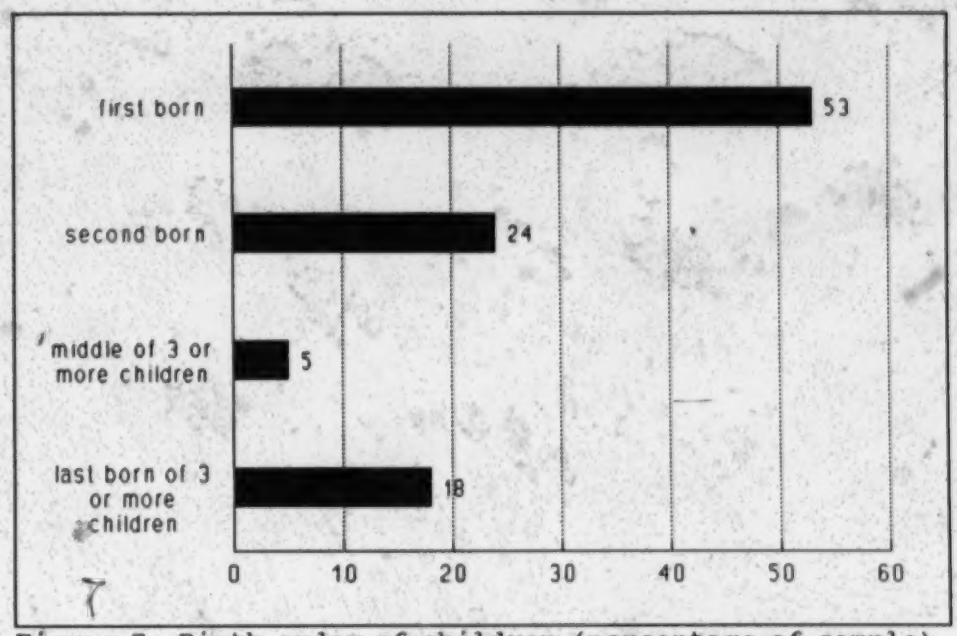

Figure 7. Birth order of children (percentage of sample).

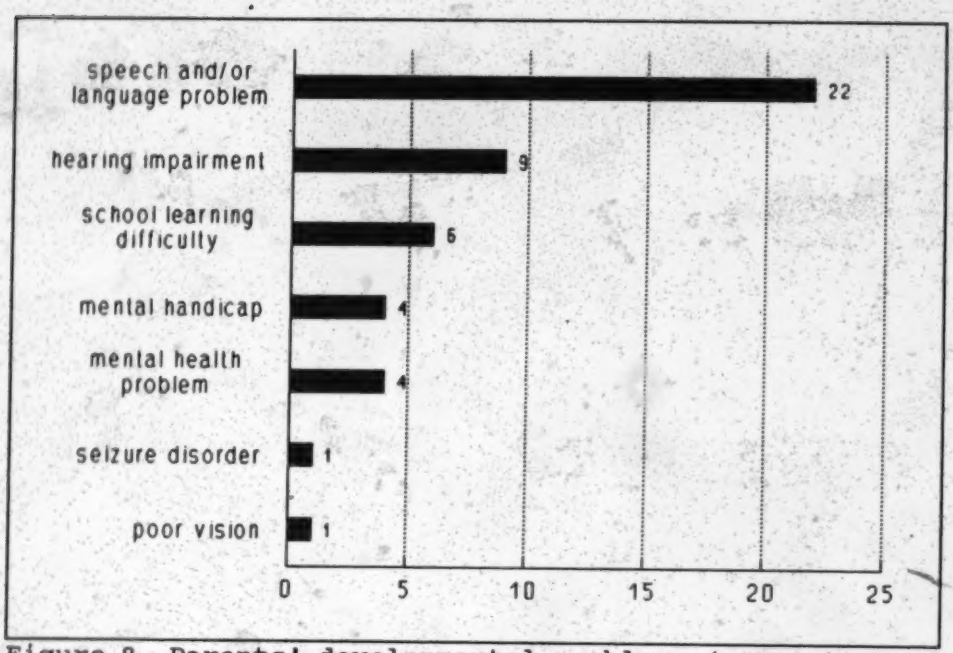

Figure 8. Parents' developmental problems (percentage of sample).

Stress domain. Only one parent obtained clinically significant ratings on both spousal support and maternal depression.

In general, the descriptions of the children's families suggest a normal range of family circumstances and background. In comparison to a recent epidemiological study of 5-year-old children with CD in Ottawa (Beitchman et al., 1988) this sample was very similar in terms of marital and occupational status and number of children in the family. The sample of the current project tended to have a greater percentage of mothers who did not complete high school (25% versus 4.3%) and a greater percentage of first born children (54% to 38%). However the differences may be representative of such demographic variables in Alberta as compared to Ottawa.

Instruments and Data Collection

In this study a variety of measures and procedures were used to overcome some of the shortcomings of previous research studies described in the literature review. This study used efficient, valid, and reliable measures that are readily available and often used in clinical practice. The strength of the data collection procedures in this study is their ecological validity. "Ecological validity refers to the extent to which situations in the experiment are representative of the population of situations to which an investigator wishes to generalize" (Kratochwill, 1978). For

example, by using the speech-language pathologist's judgment to identify the range and severity of the communication deficits to determine subgroups of children, rather than giving a standardized battery as is typical in such research projects, the procedures match actual clinical practice. In addition, such a procedure means that the instruments used were tailored to the child, rather than the child having to fit into the parameters provided by a preselected battery of tests (which may not be appropriate for the diagnosis of the child's range and severity of communication skill deficits). In keeping with an ecological orientation to the identification of behavioral disorders (Knoff, 1986), a wide range of psychological/developmental information was provided by the parents based on their knowledge of their child in a variety of settings over a relatively long period. Each child was evaluated with the instruments indicated below.

General Information and History questionnaire

(see Appendix 1)

This questionnaire takes about 15 minutes for a parent to complete and does not identify the child's name or address. It includes the following three elements:

1. Relevant demographic (note: socioeconomic status was derived from Hollingshead, 1975), medical, developmental, and family questions followed the Wickerstrom et al. (1985) guidelines. The information

from these questions was used to provide comprehensive subject descriptions.

2. Other rating questions came from Form 6 of the Depression, Relationship with Spouse, and Life Stress domains of the Parenting Stress Index (Abidin, 1983; Loyd & Abidin, 1985). The parenting stress information was included to account for potential confounding factors in the mother's reporting of social-emotional problems and to provide additional information as to family relationships, which could have implications for the service delivery system.

3. Parents also rated their child's conversational participation in terms of four styles. This latter rating scale used a format of descriptions of communication skills involving a synthesis or paraphrasing by the investigator, Donald Croft, of the written comments made by Dr. Marc E. Fey of the Department of Communicative Disorders at the University of Western Ontario. Fey (1986) described the four proposed classifications of social conversation in his 1986 text Language Intervention with Young Children. This information was included to add a much needed pragmatic parameter to subject descriptions.

Child Behavior Checklist (CBCl) (Achenbach & Edelbrock, 1983)

This rating scale is completed by the parent in approximately 20 minutes and provides a profile of social-emotional problems. It is highly regarded as a valid and reliable rating scale for the purposes of screening for mental health problems and the identification of significant types of psychopathology (Martin, Hooper & Snow, 1986). There are 118 behavior problem items of clinical interest to parents and mental health workers on the 4- and 5-year-old scale. The CBCl provides a total problem behavior score, internalizing and externalizing broad-band scores, and a profile of narrow-band scores involving eight empirically derived subscales for boys and girls separately. These subscales were derived by factor analysis of a clinically referred population in the eastern United States of America involving 500 children (for the 4- and 5-year-old scale) that matched population norms for age, gender, socioeconomic status (SES), and race distributions. For the 4- and 5-year-old scale there is also a social competence section that includes 10 descriptive questions related to home responsibilities/activities and peer/sibling relationships.

The Child Behavior Checklist was scored by software developed by Baron (1989) specifically for this purpose. Norms were developed in terms of age, gender, and socioeconomic variables (Hollingshead,1975) based on 200 4-

and 5-year-old children who had not been referred for psychiatric services. Broad-band (internalizing or externalizing behavior problem) and subscale scores are reported as normalized T scores calculated in terms of the extensive normative data. Clinical range cut-off points for the total behavior problem and social competence scores respectively are listed as follows: boys > 42 (90th percentile) and < 9.5 (10th percentile) and girls > 42 (88th percentile) and < 10.0 (10th percentile). Clinical range cut-off points for scores on the internalizing and externalizing scales are T scores > 63 and for the eight narrow band behavior problem subscales are T scores > 70. With separate scales for boys and girls, gender differences in social-emotional profiles were investigated. As there was no matched sample of normal children investigated in this study, the normative sample for the CBCl was used for comparison.

The CBCl manual (Achenbach & Edelbrock, 1983) details a number of studies regarding validity and reliability. In terms of content validity, the clinically referred children received significantly higher scores ($p<.005$) than demographically similar nonreferred children on 116 of the 118 behavior problem items, and they received significantly lower scores ($p<.01$) on all social competence items with effects of age, race, gender, and SES controlled (p. 51). Construct validity is reported as Pearson correlations

between raw scores on all the CBCl profile scales and raw scores on those scales from the Conners Parent Questionnaire (Conners, 1973) and the Quay-Peterson Revised Problem Behavior Checklist (Quay-Peterson, 1983) that appeared to be most similar to the CBCl subscales. The construct validity study involved 51 clinically referred 6- to 11-year-old children. Almost all correlations were significant at the $p<.05$ or better level, and correlations between total behavior problem scores ranged from .71 to .92, despite considerable differences in the content and construction of the tests. In terms of criterion related validity for 4- and 5-year-old children (N=400), referred children had significantly lower scores on all social competence scales and significantly higher scores on all behavior problem scales than nonreferred children at the $p<.001$ level with age, race, gender, and SES variables controlled.

Again, in the administration manual for the CBCl (Achenbach & Edelbrock, 1983), test-retest reliabilities of the item scores (based on a one-week interval of mother's ratings on nonreferred children, N=72) were reported as an overall intraclass correlation coefficient of .952 for the 118 behavior problems and .996 for the social competence items. The manual indicates that for a three-month interval (N=12) the intraclass correlation coefficients were .838 for the 118 behavior problems and .974 for the social competence items. Inter-parent agreement on item scores for a

clinically referred sample (N=168) were reported as intraclass correlation coefficients of .985 for the 118 behavior problems and .978 for the social competence items. In terms of one-week test-retest reliabilities (4- and 5-year-old children), Pearson correlations for the internalizing score were .83 (boys) and .93 (girls) and for the externalizing score were .93 (boys) and .95 (girls), all statistically significant at p=.05 or better.

Minnesota Child Development Inventory (general development scale) (Ireton & Thwing, 1972) (see Appendix 2)

This checklist includes only the general development scale consisting of 131 of the most age-discriminating items from the seven primary scales of the Minnesota Child Development Inventory. The inventory measures the child's general development, gross motor, fine motor, expressive language, comprehension-conceptual, situation-comprehension, self-help, and personal-social skills. It provides an overall index of development that is satisfactorily valid from ages one through six (reliability range=.87-.93 and median=.90 Colligan, 1985). The General Development Scale takes about 10-12 minutes for parents to complete. The questions and order of presentation remain the same as originally published, but the format is changed to facilitate administration for this research project only. This information was used to replace intelligence testing

data for those children who had not received formal psychological assessment, in order to exclude those children who did not fulfil the basic criteria for being classified as having SLI.

Questionnaire/Rating Scale for the Speech-language Pathologist (see Appendix 3)

The speech-language pathologist completed a brief questionnaire/rating scale which took about 10 minutes and involved the following:

1. rating the child's conversational participation in terms of four styles, as the parents do as described above, in order to provide a pragmatic parameter;
2. indicating whether the child's hearing was formally assessed;
3. indicating if the child presents as having an above average, average, below average, or handicapped range of current cognitive functioning and also describing briefly what he or she based this judgment on (e.g., receptive language scores, knowledge of formal IQ test results, or something else);
4. describing opportunities for psychological services if they were needed for the assessment or treatment of the child.

In addition, there was a section for rating the severity of receptive and expressive language, phonological, voice, and fluency deficits. This part of the form is

completed by the speech-language pathologist as a means of using professional judgment to synthesize both descriptive/qualitative and psychometric assessment information into categories involving the range and severity of communication deficits. The clinician does this by using an adapted version of the Severity Rating Scale (see Appendix 5 for adapted version). The original scale was developed for the Assessment, Review, and Intake form of the Computerized Records and Information System for Speech Pathology (CRISSP) (Alberta Social Services and Community Health, 1987). The speech and language assessment data is based on each individual clinician's choice of instruments (e.g., Preschool Language Scale), which he or she judges as being most appropriate for assessment of each child. Thus a standardized battery of speech and language measures was not imposed for this study. This information was of prime importance, as similar studies have not specifically identified type and severity subgroups of children with SLI.

Pilot Study

The pilot study investigated the inter-rater reliability of the adapted Severity Rating Scale. Descriptions of assessment data on four preschool children with SLI were developed from case studies of actual children (Appendix 7). These case studies were rated by 33 speech-language pathologists, all of whom participated in the main study. They had received their training with the

original scale through their work experience in the Public Health system. They each rated the four cases in terms of the type and severity of communication problem (articulation, expressive and receptive language, voice, and /or fluency) using the guidelines of the adapted Severity Rating Scale (Appendix 5). A composite score reflecting severity of overall CD was calculated by the researcher afterwards for data analysis purposes related to the other goals of the study. This composite score involves the sum of the articulation/phonological, expressive language and receptive language ratings. Table 1 presents the means and standard deviations of these ratings provided by 33 speech-language pathologists for each case study as a measure of inter-rater reliability of the scale.

In terms of inter-rater reliability estimates of the six severity rating scores indicated in Table 1, analysis of variance (ANOVA) intraclass correlation coefficients (ICC) for quantitative data were calculated (Bartko & Carpenter, 1976). This measure of reliability is influenced by both the ranking and the absolute magnitude of scores. The analysis of variance provided an expression for the variance within sets of measures and for variance between sets of measures that were used to calculate the intraclass correlation coefficients as follows: articulation (a) = .99, expressive language (e) =.85, receptive language (r) =.98, fluency =.98, voice (no

ratings), and composite (a+e+r) =.96 (all coefficients @ p=<.00001).

These intraclass correlation coefficients indicated that the inter-rater reliability of the adapted Severity Rating Scale was adequate for speech-language pathologists in the public health system. These are the same clinicians who would be providing ratings in the main study based on their own assessment information, without further rater reliability being determined. However, it should be noted that close inspection of the minimum and maximum ratings made across the speech-language pathologists for each case study indicated a few subcategory scores ranged as much as three points (e.g., 1 to 3) and occasionally the composite scores ranged four points (e.g., 5 to 8).

Insert Table 1 about here

Procedures

The following procedures were used for the **main study**. The speech-language pathologists who agreed to participate in the study would scrutinize the 4- and 5-year-old children whom they were to assess to determine all those they thought would met the general criteria for SLI (described in the Sample and Setting section) based on their typical questionnaire, referral and parent telephone contact

Table 1

Pilot Study: Means and Standard Deviations of Individual Case Study Ratings Using the Adapted Severity Rating Scale by 33 Speech-Language Pathologists

	Mean	Standard Deviation
Case Study #1:		
articulation	.00	.00
expressive	2.24	.56
receptive	2.27	.57
fluency	.00	.00
voice	.00	.00
communication composite	4.52	.94
Case Study #2:		
articulation	2.09	.72
expressive	2.97	.39
receptive	1.73	.52
fluency	.00	.00
voice	.00	.00
communication composite	6.79	.82
Case Study #3:		
articulation	4.76	.44
expressive	2.73	.52
receptive	.00	.00

(table continues)

	Mean	Standard Deviation
fluency	.00	.00
voice	.00	.00
communication composite	7.48	.67
Case Study #4:		
articulation	.00	.00
expressive	3.12	.33
receptive	2.06	.43
fluency	1.36	.49
voice	.00	.00
communication composite	5.18	.64

information. For all children they thought were candidates,the speech-language pathologist gave the child's parent(s) a letter from the researcher (see Appendix 4) at the time of the speech and language assessment. This letter explained the research project and invited their "no obligation" participation by signing the consent form included (see Appendix 4). Parents who agreed to participate generally completed the required information forms (Appendices 1, 2, and 4.) while waiting for their child to be assessed, and subsequently handed them in to the clinician within a sealed envelope. After the clinician completed the questionnaire/rating scale for the speech-language pathologist (Appendix 3), it would be returned along with the sealed envelope in a self-addressed and stamped envelope to the researcher at the Glenrose Rehabilitation Hospital. Before data analysis, the speech-language pathologists' forms were double-checked by the researcher to ensure that children with exclusionary concomitant disorders were not included in the study.

Ethical Issues

This study received approval from the Department of Educational Psychology, University of Alberta, according to the University Policy Related To Ethics In Human Research as approved by General Faculties Council on January 28, 1985, and from the Research Committee of the Glenrose Rehabilitation Hospital. It was agreed that no child would

be identified by name, identification number, health unit, or address in the research report, and written consent forms were signed by a parent of each child (Appendix 4). If the parent's responses to the Child Behavior Checklist suggested a clinically significant level of psychological problems, then this information was used to facilitate notification of the family by the speech-language pathologist to encourage the family to consult with their physician, unless psychological services were already being provided.

Validity Threats and Limitations

Possible threats to the external and internal validity of the study are considered next. One particular threat to external validity is that when children are selected in a nonrandom manner based on their parents' volunteering to participate, the clinical sample may not be representative of preschool children with SLI. However, as noted previously, there were distinct similarities between this sample and that of a recent epidemiological study of 5-year-old children with CD in Ottawa (Beitchman at al., 1988) in terms of marital and occupational status and number of children in the family. However, this sample tended to have a greater percentage of mothers who did not complete high school (25% versus 4.3%) and a greater percentage of first born children (54% to 38%). Although there are no known biases with this sample, given the selection process, it

would be prudent to interpret the generalizability of the findings in this study with considerable caution.

In terms of comparisons with the population of preschool children in general, it is noted that both the General Development Scale of the Minnesota Child Development Inventory and the Child Behavior Checklist, as well as the various formal cognitive, speech, and language measures, all have normative reference groups for comparison. A limitation of these norms is that they are all American, and it is generally unknown as to what specific effect this will have on developing a perspective on Canadian children.

The considerable description of the sample in terms of developmental and demographic information will enable researchers and clinicians to decide for themselves how close the sample matches their subjects/patients of interest, and hence the relevance of the results and suggestions for them. Although the problems of making appropriate generalizations from such research findings to the individual are acknowledged, making these generalizations is not the specific intent of the current project.

A related internal threat to the representativeness of the sample involves statistical regression. As the children were originally picked on the basis of atypical scores and ratings, if they were reassessed possibly they would be reassigned to different subgroups.

There are a variety of other threats to internal validity related to the testing procedures and instruments. Extensive validity and reliability information has been published on the Child Behavior Checklist and the General Development Scale, but not for the adapted Severity Rating Scale. A pilot study on the latter, reported above, suggests that there is sufficient reliability in its use by speech-language pathologists for the purposes of this study. However, no periodic reliability checks were completed by any of these professionals providing the data. Extensive field trials have yielded a number of recent revisions and it is certainly very high in clinical utility and content validity. Although the category definitions are operationally defined in concrete terms (see Appendix 7), each speech-language pathologist is using different tests of various degrees of validity and reliability, as well as their own observations of the child, to make the ratings. However, this process does match current professional practice in the Public Health system and does not artificially constrain the speech-language pathologist in providing a rating of the individuals child's range and severity of communication skill deficits, as a standard research battery might.

Although there has been limited investigation into the validity and reliability of both the parents' and the speech-language pathologists' ratings on this measure of

conversational participation at this time, a measure of inter-rater reliability is investigated as part of the data analysis of the study. It appears to have adequate content validity, as it was derived specifically from Fey's written descriptions of such categories, based on his extensive clinical experience and research (Fey, 1986).

Finally, even the order in which the parents chose to complete the questionnaires and rating scales may have some unknown effect on the internal validity.

Chapter V

Communication Disorder Characteristics

The speech-language pathologists' ratings based on the adapted Severity Rating Scale (Appendix 5) were used to identify meaningful CD profiles for the children that account for the type and severity of their communication deficits.

Goal 1a

Table 2 describes the percentages of boys and girls in each of four categories of CD that could be used to describe the sample. These categories reflect the severity level of language impairment (mild versus moderate-severe), but only the presence of a speech disorder, not its severity level.

Insert Table 2 about here

However, for many clinical purposes, it does not seem appropriate to consider the severity of the language problems only and neglect the severity of articulation/phonological problems that are an important component of the CD of many children with SLI. Unfortunately, it was not possible to develop realistic and clinically relevant subgroups based on the original severity ratings provided by the speech-language pathologists, that is, 0-5, using the adapted Severity Rating Scale

Table 2

Percentage of Children in Type and Severity Groups

	Type and Severity Groups			
	(m L)	(m-s L)	(m L+sp)	(m-s L+sp)
Boys (n = 49)	37	4	41	18
Girls (n = 18)	28	5	17	50
Total (n = 67)	34	5	34	27

Note. (m L) = mild language only; (m-s L) = moderate-severe language only; (m L+sp) = mild language with speech; (m-s L+sp) = moderate-severe language with speech

Note. Mild language is defined as adapted Severity Rating Scale ratings of 0 - 2 for receptive or expressive language. Moderate-severe language is defined as adapted Severity Rating Scale ratings of 3 to 5 inclusive for receptive or expressive language. Mild language with speech is defined as adapted Severity Rating Scale ratings of 0-2 for receptive or expressive and a rating of 1-5 for articulation. Moderate-severe language with speech is defined as adapted Severity Rating Scale ratings of 3-5 for receptive or expressive and ratings of 1-5 for articulation.

(Appendix 5), for the articulation, expressive language and receptive language parameters because of the vast number of combinations of these three variables that were obtained and the small number of children in each potential group.

To account for the severity of articulation problems, a communication composite score was developed for each child based on the sum of his or her articulation, expressive language, and receptive language ratings from the adapted Severity Rating Scale (range 0-5). The sum of the scores was chosen as there did not seem to be any clinical or theoretical basis for weighing one communication problem as being more important than the other two in qualitatively or quantitatively describing the severity of the child's CD. This communication composite score was used to rank order the children in terms of the overall severity of both their speech and language impairments.

As would be expected since the individual ratings were used to create the composite, there were significant ($p < .00001$) correlations between the composite scores for the two CD groups and the corresponding articulation, expressive language and receptive language ratings from the adapted severity rating scale:

1. speech and language group (n=41)
    a. articulation: .60210
    b. expressive language: .80604
    c. receptive language: .66565

2. language group (n=26)

a. expressive language: .96498

b. receptive language: .97974

Statistical analysis using a t-test procedure between the group of 24 children who were receiving initial assessments (mean = 5.3) and the group of 43 children receiving review assessments (mean = 4.6) did not reveal significant differences on this communication composite score variable.

Table 3 describes means and standard deviations of the communication composite score for boys and girls separately in terms of the two severity groupings based on the severity of their communication composite scores (mild versus moderate-severe).

For the whole sample, the communication composite scores ranged from 1 (e.g., articulation = 0, expressive = 1 and receptive = 0) to 11 (e.g., articulation = 3, expressive = 4, and receptive = 4). The cut-off point between the two groups was set at 5. Thus, 36 children were in the mild group with composite scores 1-4 and 31 children were in the moderate-severe group with composite scores 5-11. The mild communication composite group reflected children with mild language ratings and only mild articulation ratings (if any at all), while the moderate-severe group had a variety of articulation ratings with one of either the expressive or receptive language ratings being at least in the moderate

range (according to the terms of the Adapted Severity Rating Scale in Appendix 5).

Insert Table 3 about here

Goal 1b

The conversational participation ratings provided by both the parent and speech-language pathologist were used to identify meaningful conversational participation profiles in order to group the children in terms of a characteristic style of interaction. The conversational participation rating system involved a determination of 0 (not true), 1 (sometimes true), or 2 (often true) for each of the active communicator, passive communicator, verbal noncommunicator, and inadequate communicator categories (see Appendices 1 and 3). Thus, each child was rated by his or her speech-language pathologist and parent separately, to obtain two separate profiles involving scores in each of the four categories.

Speech-language pathologist ratings indicated 26 different combinations of ratings (e.g., active communicator =0, passive communicator =2, verbal noncommunicator =0, and inadequate communicator =1); while parent ratings indicated 30 different combinations. Thus, there was no single nor even a few characteristic styles of conversational

Table 3

Means and Standard Deviations of the Communication Composite Score for Various Communication Composite Disorder Subgroups

		Mean	Std.Dev.
Boys overall	(n=49)	4.4	2.5
Boys mild com. composite group	(n=28)	2.5	1.1
Boys mod-sev. com. comp. group	(n=21)	6.8	1.6
Girls overall	(n=18)	6.2	3.4
Girls mild com. composite group	(n=08)	3.0	1.3
Girls mod-sev. com. comp. group	(n=10)	8.7	2.0
Total overall	(n=67)	4.8	2.8

Note. mild com. composite group = composite scores of 1 - 4; mod-sev. com. comp. group = composite scores of 5 - 11

participation for this sample. In addition, an attempt to numerically represent clusters of the 30 different combinations based on a summary score of the two intersecting continuums of assertiveness and of responsiveness was not successful. This lack of success was due again to the vast number of combinations reported and the fact that often a wide variety of clinical profiles were characterized by the same summary score.

However, out of the large number of combinations of profiles of conversational participation that were identified by speech-language pathologists, four could be termed "pure", with ratings of 1 or 2 for one of the four descriptions and 0 for the other three. Thirteen percent (n = 9) of the total sample were identified as having normal rates of conversational participation (active communicator ratings = 1 or 2 and all other ratings =0). The proportion of the sample expressed as percentages for the other three "pure" groupings were: 10% (n = 7) for passive communicator, 3% (n = 2) for inactive communicator, and 3% (n = 2) verbal noncommunicator.

Goal 1c

The degree of overall consistency between the parent's and speech-language pathologist's ratings of conversational participation was investigated. Although the parents' and speech-language pathologists' ratings indicated tremendous diversity in styles of conversational participation for

preschool children with SLI, it was interesting to note that there were statistically significant correlations between both raters overall. ANOVA intraclass correlation coefficients (ICC) (Bartko & Carpenter, 1976) were used for this purpose (as described in the pilot study). The following statistically significant reliability coefficients ($p<.00001$) were identified for the relationship between the mother's and speech-language pathologist's ratings of conversational participation: .36 (active communicator), .28 (passive communicator), .34 (verbal noncommunicator) and .30 (inactive communicator).

Regardless of the statistical significance of the correlations reported above, these results must be regarded with caution. From the point of view of the individual child, the combination of the mother's ratings compared with the speech-language pathologist's sometimes looked quite different from a clinical point of view. For example, on a child the parent reported active communicator = 1, passive communicator = 0, verbal noncommunicator = 1, and inactive communicator = 1, the speech-language pathologist reported active communicator = 0, passive communicator = 0, verbal noncommunicator = 0, and inactive communicator = 2.

Goal 1d

The relationships between the CD profiles and the conversational participation profiles were investigated. This investigation was complicated by the lack of

characteristic conversational participation profiles, except for the "pure" profiles which were judged to have too few children in each profile for complete analysis. However, inspection of the communication composite scores for children of these "pure" profiles indicated that eight of the nine children in the active communicator category had a mild level of communication composite score, while six of the seven children in the passive communicator catergory had a moderate-severe level of communication disorder. Both the inactive communicator and verbal noncommunicator categories each had one child with mild and one child with moderate-severe levels of communication composite score.

Inspection of the conversational participation ratings for each of the mild and moderate-severe severity groups (based on the communication composite scores) indicated that there was a wide variety of conversational participation ratings within each group. Thus children with relatively similar degrees of CD did not have a similar style of conversational participation.

Summary Goal 1

This sample of preschool children with SLI were characterized by a high proportion (61%) having both speech and language problems. Only about a third of the sample had "pure" conversational participation profiles, and characteristic profiles of conversational participation could not be adequately determined.

Social-emotional Characteristics

The clinical parameters from the Child Behavior Checklist were used to determine the type, severity, and clinical significance of both behavior and social competence problems of the sample as categorized by gender and CD groups (A1). In addition, these findings were compared with the clinical and nonclinical samples of the normative research for the Child Behavior Checklist. Detailed descriptions of the social-emotional characteristics of the sample are needed for the purpose of replication and to aid in determination of generalizability of the findings to other samples of preschool children with SLI.

It was noted that statistical analysis using a t-test procedure determined that there were no statistically significant differences ($p = .01$) between the group of 24 children receiving initial assessment services and the group of 43 receiving review assessment services in terms of total behavior problem, social competence, internalizing, or externalizing T scores.

Goal 2a

In order to investigate the relative risk for significant social-emotional problems for this sample, the percentage of children with clinically significant T scores from both the behavior problem and social competence scales were compared with the clinical and nonclinical samples of the normative research for the Child Behavior Checklist

(Achenbach & Edelbrock, 1983, p. 64). Table 4 presents data that suggest that for both boys and girls in this sample the percentages of children with clinically significant Behavior Problem Scale scores and Social Competence Scale scores were considerably greater than the rates for normal children who had not received mental health services in the original normative study. This finding was true in all cases except for girls' social subscale T scores and boys' activities subscale T scores of the Social Competence scale. That there were only these two exceptions was confirmed with a comparison between the mean T scores of these children and the T scores of both the clinical and nonclinical subgroups from the original normative studies of the CBCl (Achenbach & Edelbrock, 1983, pp. 210, 213).

Inspection of the data suggests that none of the rates of clinical significance for this sample quite reach the levels for children who had been specifically referred for mental health services in the original normative study. Although this current sample of preschool children with SLI had been referred for speech-language services and not mental health services, there was a high incidence of clinically significant levels of behavior (43% of the sample) and social competence (21% of the sample) problems reported compared with a normal population sample.

Inspection of the items rated as problems from the Activities and Social subscales from the Social Competence

scale gives some indication of the parents' concerns about these children compared to their peers. These children do not have many chores and those they do have were done poorly. They rarely belong to organizations, clubs, teams, or groups and this is also reflected in their low rates of participation in sports. Finally, they also have few close friends beyond their siblings. These observations held true for boys and girls, although it is important to note that for all the boys in the clinical range on the Social Competence scale, their social competence problems reflected Social subscale items, whereas the girls' problems reflected items from both the Activities and Social subscales.

Insert Table 4 about here

Goal 2b

The scores from the CBCl were used to determine if there is a characteristic profile of social-emotional behavior for this sample. Table 5 presents the mean and standard deviation of the broad-band T scores related to the behavior problem scales, and Table 6 does the same for social competence scales. These T scores are categorized in terms of the total sample, gender, and/or communication composite subgroups. T-test analysis for Tables 5 and 6 across gender and/or CD subgroups indicated that there was only one statistically significant difference ($p < .01$), and

Table 4

Percentage of Preschoolers with Clinically Significant Behavior Problem Scale and Social Competence Scale Scores Compared With the Clinical and Nonclinical Samples of the CBCl Norms (Achenbach & Edelbrock, 1983, p. 64)

	Behavior Problem Scales		
	Total	Internalizing	Externalizing
BOYS SAMPLE (n = 49)	47%	53%	31%
Normative clinical	72%	59%	62%
Normative nonclinical	10%	11%	10%
GIRLS SAMPLE (n = 18)	33%	39%	33%
Normative Clinical	73%	68%	42%
Normative Nonclinical	12%	09%	06%

	Social Competence Scales		
	Total	Activities	Social
BOYS SAMPLE (n = 49)	20%	0%	25%
Normative Clinical	48%	19%	43%
Normative Nonclinical	09%	02%	04%

(table continues)

	Social Competence Scales		
	Total	Activities	Social
GIRLS SAMPLE (n = 18)	22%	11%	06%
Normative Clinical	39%	15%	18%
Normative Nonclinical	10%	0%	01%

Note. Clinically significant scores were determined by: total behavior problem score > 42 (> 90 percentile); internalizing/externalizing T score > 63; girls total social competence score < 10.0; boys total social competence score < 9.5; activities or social competence T score < 30

this finding was between boys and girls in terms of the externalizing T score, with boys having higher mean T scores than girls.

Insert Tables 5 and 6 about here

To investigate potential trends for boys or girls, a comparison was made between the frequency of children who had significantly greater internalizing than externalizing T scores or vice versa (i.e., a difference of 10 points or more). In this sample, 23% of boys had internalizing T scores that were significantly greater than externalizing, 67% had scores within an equal range, and 10% had externalizing T scores that were significantly greater than internalizing. However, 61% of the girls had internalizing T scores that were significantly greater than externalizing, while 39% of the girls had both T scores within an equal range. In terms of a general characterization, the findings suggest a greater tendency for girls than boys to have more internalizing problems than externalizing problems, while neither boys nor girls tend to have externalizing T scores that are significantly greater than internalizing T scores.

The range of subscale mean T scores and standard deviations for boys and for girls are presented as another means for describing the general social-emotional

Table 5

Means and Standard Deviations for Broad-Band T Scores of Behavior Problem Scales (CBCl)

Group		B.Prob		Internalizing		Externalizing	
		M	SD	M	SD	M	SD
Total	n=67	61	11	61	11	57	11
Boys total	n=49	62	10	61	10	59	10
Girls total	n=18	58	12	61	12	51	12
Boys Mild Com. Composite	n=28	63	10	62	10	61	10
Boys Mod-sev. Com. Composite	n=21	60	10	60	11	61	10
Girls Mild Com. Composite	n=8	61	13	62	12	56	13
Girls Mod-sev. Com. Composite	n=10	55	12	60	13	47	10

Note. mild com. composite group = composite scores of 1-4; mod-sev. com. comp. group = composite scores of 5-11

Table 6

Means and Standard Deviations for T Scores of Social Competence Scales

Group		Soc. Comp.		Activities		Social	
		M	SD	M	SD	M	SD
Total	n=67	48	11	49	8	43	12
Boys total	n=49	48	11	50	7	42	12
Girls total	n=18	46	11	46	10	46	9
Boys Mild Com. Composite	n=28	49	11	50	7	45	12
Boys Mod-sev. Com. Composite	n=21	47	12	50	6	39	13
Girls Mild Com. Composite	n=8	43	10	44	12	43	7
Girls Mod-sev. Com. Composite	n=10	49	13	47	9	48	11

Note. mild com. composite group = composite scores of 1-4; mod-sev. com. comp. group = composite scores of 5-11

characteristics of the sample in Table 7. The immature subscale for boys and the social withdrawal subscale for girls each had the highest mean T scores. In addition, these two subscales also had the largest degree of difference between the means of this sample and those of the nonclinical normative sample for the CBCl (Achenbach & Edelbrock, 1983, pp. 210, 213). The social withdrawal subscale for boys and the hyperactivity subscale for girls seems to be of secondary importance.

Insert Table 7 about here

In order to investigate the actual clinical significant of the narrow-band T scores reported earlier, the individual items that comprise the Immaturity subscale for boys and the Social Withdrawal subscale for girls were ranked in terms of the top six based on their mean ratings across all the boys and girls with SLI respectively. The Immaturity subscale T score seems to be mostly reflecting the following: speech problem (#79); can't concentrate, can't pay attention for long (#8); acts too young for his/her age (#1); confused or seems to be in a fog (#13); clings to adults or too dependent (#11); and cries a lot (#6). The Social Withdrawal subscale T score mostly seemed to be reflecting the following: speech problem (#79); can't concentrate, can't pay attention for long (#8); acts too young for

Table 7

Means and Standard Deviations of the Subscale Scores from the Revised Child Behavior Profile in Relation to the Nonclinical Normative Sample for the CBCl (Achenbach & Edelbrock, 1983, pp. 210, 213)

	BOYS n=49 T SCORES Mean (SD)	NONCLINICAL T SCORES Mean	difference of mean scores
social withdrawal	64.51 (7.5)	57.9	6.6
depressed	60.92 (7.2)	57.7	3.2
immature	66.31 (8.8)	57.7	8.6
somatic complaints	62.14 (7.2)	58.6	3.5
sex problems	62.37 (7.4)	59.6	2.8
schizoid	62.00 (6.1)	58.1	3.9
aggressive	62.49 (9.9)	57.7	4.8
delinquent	60.80 (6.0)	58.3	2.5

(table continues)

	GIRLS n=18 T SCORES Mean (SD)	NONCLINICAL T SCORES Mean	difference of mean scores
somatic complaints	61.06 (6.6)	57.6	3.5
depressed	61.61 (9.5)	57.5	4.1
schizoid/anxious	61.50 (7.9)	57.6	3.9
social withdrawal	65.39 (6.4)	57.6	7.8
obese	56.50 (3.4)	58.2	-1.7
aggressive	59.83 (7.1)	57.4	2.4
sex problems	61.06 (3.4)	60.6	.4
hyperactive	63.17 (10.2)	57.6	5.6

his/her age (#1); withdrawn (#111); refuses to talk (#10); and day-dreams or gets lost in his/her thoughts (#17).

In order to develop a general characteristic profile of social-emotional behavior for this sample that would have even more immediate clinical significance, the mean ratings for the 12 highest individual items of the Child Behavior Checklist (out of 118) are presented in Table 8, with boys and girls listed separately.

Insert Table 8 about here

It appears that there are considerable similarities across both boys and girls in this sample in their reported behavior problems with the following seven items being shared in their top 12 as indicated in Table eight:

1. #79: speech problem
2. #08: can't concentrate, can't pay attention too long
3. #19: demands a lot of attention
4. #03: argues a lot
5. #63: prefers playing with older children
6. #41: impulsive or acts without thinking
7. #86: stubborn, sullen or irritable

Table 8

Mean Ratings on the 12 Highest Items on the Revised Behavior Problem Profile of the Child Behavior Checklist for Boys and Girls Separately

BOYS (n=49)	Mean Rating
01. speech problem (#79)	1.51
02. can't concentrate, can't pay attention too long (#8)	1.14
03. argues a lot (#3)	1.10
04. can't sit still, restless or hyperactive (#10)	1.04
05. disobedient at home (#22)	1.00
06. demands a lot of attention (#19)	.96
07. impulsive or acts without thinking (#41)	.94
08. showing off or clowning (#74)	.94
09. prefers playing with older children (#63)	.90
10. picks nose, skin or other parts of body (#58)	.90
11. stubborn, sullen or irritable (#86)	.82
12. temper tantrums or hot temper (#95)	.76

(table continues)

GIRLS (n=18)	Mean Rating
01. speech problem (#79)	1.56
02. shy or timid (#75)	1.11
03. can't concentrate, can't pay attention too long (#8)	1.06
04. demands a lot of attention (#19)	1.06
05. prefers playing with older children (#63)	1.06
06. whining (#109)	.94
07. clinging to adults, too dependent (#11)	.94
08. argues a lot (#3)	.94
09. fears certain animals, situations, or places other than school (#29)	.83
10. cries a lot (#14)	.78
11. impulsive or acts without thinking (#41)	.78
12. stubborn, sullen or irritable (#86)	.72

Beyond their CD, this sample of preschoolers with SLI is generally characterized by problems related to attention-deficit hyperactivity disorders compounded by stubbornness, an argumentative manner, attention seeking, and a tendency to play with older children.

With regard to the behaviors that were differentially reported for each gender, the boys were also characterized by the following: #10 (can't sit still, restless, or hyperactive), #22 (disobedient at home), #74 (showing off or clowning), #58 (picks nose, skin or other parts of body), and #95 (temper tantrums or hot temper). In general the distinct characteristics for boys seem to reflect an active and "acting out" manner. Girls were differentially characterized by the following: #75 (shy or timid), #109 (whining), #11 (clinging to adults, too dependent), #29 (fears certain animals, situations, or places other than school) [typically fears of ants, snakes, caterpillars, dogs, and cats], and #14 (cries a lot). In general the distinct additional characteristics for girls seems to reflect a more inactive and anxious manner.

Numerous studies in the literature review report attention-deficit hyperactivity disorder (ADHD) to be a common characteristic of children with CD, and this statement seems to be supported by the prominence of such behaviors shown in Table 8. In the clinical sample of this

study, 63% of the boys and 44% of girls were rated as having ADHD, with the rate for the total sample being 58%.

This characterization of ADHD was based on the sum of their scores on the three items from the 118 items of the Child Behavior Checklist that were judged to have the most clinical relevance: #8 (can't concentrate), #10 (hyperactive), and #41 (impulsive). The Child Behavior Checklist for boys aged four to five does not have a narrow-band scale that reflects hyperactivity, but there is such a scale for girls. The correlation of the T scores of the hyperactivity subscale for girls with ADHD sum scores greater than or equal to three and their ADHD sum scores was .87 which is significant at $p < .001$ for a 2-tailed test. The correlations of items eight, 10, and 41 with the ADHD sum score for these girls were .92, .94, and .63 respectively, with the can't concentrate and hyperactive items both being significant at $p < .001$ for a two-tailed test. Across the total sample of 67 children, the correlations of the three items with eachother were all significant at $p < .001$ for a one-tailed test. Thus on clinical and statistical grounds this sum score was judged as being a reasonable estimate of those children who may have attention-deficit hyperactivity disorder.

Table 9 presents the percentage of children in this subgroup (with a sum score of greater than or equal to three) who also have clinically significant levels of

behavior problems and social competence problems. The finding that 72% of this ADHD subgroup have clinically significant levels of behavior problems suggests there may be a strong association between these two factors for preschoolers with SLI.

Insert Table 9 about here

Summary Goal 2

This sample of preschoolers with SLI was characterized by a considerable risk for clinically significant levels of behavior and social competence problems as compared with normative sample data provided for the CBCl. The only significant broad band T score difference for gender or CD subgroups was that boys had greater externalizing T scores than girls. The behavior problem profiles of girls showed a stronger tendency toward significantly greater internalizing than externalizing problems as compared to the boys profiles, which generally had similar levels of internalizing and externalizing problems. In terms of an individual behavior problem profile, the sample was mostly characterized by ADHD compounded by stubbornness, an argumentative manner, attention seeking, and a tendency to play with older children. However, a wide variety of other behavior problems were identified at the level of the individual child.

Table 9

Percentage of Preschoolers with Significant Attention Deficit-Hyperactivity Disorder Scores who have Clinically Significant Behavior Problem and Social Competence Total Scores

Group	n	% total sample with ADHD	Scale: Beh.Problem	Scale: Soc.Competence
Boys	31	(63%)	71%	19%
Girls	08	(44%)	75%	25%
Total ADHD	39	(58%)	72%	21%

Note. Attention Deficit-Hyperactivity Disorder determined by total of ratings (0-2) on items 8 (can't concentrate), 10 (hyperactive), and 41 (impulsive) from Revised Child Behavior Profile being ≥ 3.

Note. Clinically significant scores were determined as follows: girls b.p. score > 42; boys b.p. score > 42; girls s.c. score < 10.0; boys s.c. score < 9.5

Relationships between Communication Disorder and Social-Emotional Profiles

The overall goal of this section was to investigate the relationships between the CD profiles and the scores from the Revised Child Behavior Profile of the Child Behavior Checklist.

Goal 3a

It was hypothesized that as the severity of CD increased, the broad-band T scores of the CBCl behavior problem scale would also increase and the broad-band T scores of the social competence scale of the CBCl would decrease. Table 10 presents the correlations between these T scores and the communication composite score for the language only, language+speech, and total sample groups. Most of the correlations are not statistically significant ($p < .01$) except for the externalizing T score for the total sample. In fact for all of the behavior problem scores there was either virtually no correlation or a correlation in the opposite direction of that hypothesized. This lack of relationship in the hypothesized direction was most clearly observed in the statistically significant negative correlation between externalizing T scores and the communication composite scores for the total sample. For the scores of the social competence scale, none of the relationships with the communication composite scores were significant, but the relationship between the activity

subscale score and the communication composite score approached significance in the hypothesized direction for the language only group.

Insert Table 10 about here

Table 11 lists the mean and standard deviations of the broad-band T scores from the Revised Child Behavior Profile of the CBCl for the two severity level groups based on the communication composite scores. Generally the mean CBCl T scores of the mild group were more severe than those for the moderate-severe group, except for the Social T score. However, t-tests between the two groups yielded no significant differences on any of the parameters listed above. These findings suggest again that in general as the severity of the CD increased, there was no corresponding increase in the number of behavior problems nor decrease in social competence ratings as reported by mothers.

Insert Table 11 about here

To further investigate the relative lack of positive relationship between severity of CD and severity of behavior problems, a comparison was made between the mild communication composite group and the moderate-severe communication composite group at the level of individual

Table 10

Correlations of Behavior Problem and Social Competence Scale Broad-Band T Scores with Communication Composite Scores for the Language Only and Language + Speech Subgroups and the Total Sample

	Revised Child Behavior Profile T Scores					
	B.P.	Int.	Ext.	S.C.	Act.	Soc.
Com. Composite Language only n = 26	-.18	-.06	-.26	-.22	-.31	-.07
Com. Composite Language + Sp. n = 41	-.03	.09	-.20	.02	-.09	-.05
Com. Composite Total sample n=67	-.18	-.04	-.32*	.03	.02	.01

Note. 2-tailed significance: *=.01, **=.001

Note. B.P. = total behavior problem T score; Int. = internalizing T score; Ext. = externalizing T score; S.C. = total social competence T score; Act. = activities T score; Soc. = social T score

Table 11

Means and Standard Deviations of the Mild and the Moderate-Severe Communication Composite Score Groups in terms of Broad-Band T Scores from the CBCl

	Group			
	Mild		Mod-Severe	
	n=36		n=31	
	Mean	(SD)	Mean	(SD)
Behavior Problem	62.5	(10.4)	58.6	(10.8)
Internalizing	62.2	(10.3)	60.2	(11.5)
Externalizing	59.9	(10.4)	53.8	(10.9)
Social Competence	47.7	(11.0)	47.7	(11.8)
Activities	47.9	(09.0)	49.3	(07.3)
Social	44.4	(10.6)	42.0	(12.7)

Note. Mild = communication composite scores of 1-4; Mod-severe = communication composite scores of 5-11

items of the CBCl Behavior Problem Scale. Table 13 lists the 12 items receiving the highest mean ratings and indicates that these two groups obtained remarkably similar behavior problem profiles. Of the top 12 items 10 were the same, while two different items were distinct for each group. The mild group (28 boys and 8 girls) was differentially identified as stubborn, sullen, or irritable, with temper tantrums, or a hot temper. However, the moderate-severe group (21 boys and 10 girls) was differentially identified as shy or timid and clinging to adults or too dependent. Although, there does not seem to be a strong relationship between severity of CD and severity of social-emotional problems in this sample, there are interesting relationships at the level of individual social-emotional problems.

Insert Table 12 about here

It is important to note that all 14 items shown in Table 12 are also found in the top 12 of the boys' or girls' profiles in Table 8. The presence of so many overlapping behaviors in both types of profiles suggests that there is a relatively characteristic profile of reported behavior problems that describes preschool children with SLI.

Table 12

Behavior Problem Profiles for the Mild Communication Composite and Moderate-Severe Communication Composite Score Groups

Item	Mean Item Rating For Each Communication Composite Score Group	
	Mild	Mod-Severe
#079 speech problem	1.36	1.71
#003 argues a lot	1.19	.90
#008 can't concentrate, can't pay attention for long	1.17	1.06
#019 demands a lot of attention	1.06	.90
#022 disobedient at home	1.03	.77
#041 impulsive or acts without thinking	1.00	.74
#074 showing off or clowning	1.00	.74
#063 prefers playing with older children	.97	.90

(table continues)

	Mean Item Rating For Each Communication Composite Score Group	
Item	Mild	Mod-severe
#010 can't sit still, restless, or hyperactive	.92	.87
#109 whining	.83	.74
#086 stubborn, sullen, or irritable	.94	
#095 temper tantrums or hot temper	.83	
#075 shy or timid		.77
#011 clings to adults or too dependent		.77

Note. Mild = communication composite scores of 1-4; Mod-severe = communication composite scores of 5-11

Goal 3b

It is hypothesized that children with both speech and language problems would have significantly higher total behavior problem, internalizing, and externalizing T scores and significantly lower social competence T scores than those with language problems only (controlling for the severity of the language problems). Table 13 presents the means and standard deviations of the sample for the major scores derived from the Child Behavior Checklist. Comparisons were obtained of the mild language only group versus the mild language and speech group and of the moderate-severe language only group versus the moderate-severe language with speech group. Statistical analysis involving t-tests indicated that there were no significant differences for any of the major scores between groups at the same severity of language problem level. This finding suggests that having a speech disorder in addition to a language impairment did not increase or decrease the behavior problem or social competence ratings in comparison with those children who had the same severity of language problem level but no degree of speech disorder.

Insert Table 13 about here

To further clarify this relative lack of effect of having a speech disorder for children with SLI, the

Table 13

Means and Standard Deviations of Broad Band T Scores from the Child Behavior Checklist for the Four Type and Severity Groups

	Type and Severity Groups			
	mild		moderate-severe	
	(L)	(L+sp)	(L)	(L+sp)
	N=23	N=23	N=3	N=18
Behavior Problem T				
mean	63.7	58.0	63.0	59.9
standard dev.	9.6	10.9	11.3	11.4
Internalizing T				
mean	62.9	59.0	65.0	61.4
standard dev.	10.2	11.2	3.6	12.0
Externalizing T				
mean	60.8	55.7	59.7	53.7
standard dev.	9.6	10.6	19.4	11.2
Soc. Comp. T				
mean	47.7	49.0	32.7	48.6
standard dev.	11.4	11.1	11.7	10.4

(table continues)

	Type and Severity Groups			
	mild		moderate-severe	
	(L)	(L+sp)	(L)	(L+sp)
	N=23	N=23	N=3	N=18
Activities T				
mean	47.0	51.3	36.7	49.1
standard dev.	9.9	6.1	4.6	6.9
Social T				
mean	44.8	41.3	36.0	45.0
standard dev.	11.2	11.6	14.1	12.0

Note. (L) = language only (L + sp) = mild language with speech Note. Mild language is defined as adapted Severity Rating Scale ratings of 0 - 2 for receptive or expressive language. Moderate-severe language is defined as adapted Severity Rating Scale ratings of 3 to 5 inclusive for receptive or expressive language. Mild language with speech is defined as adapted Severity Rating Scale ratings of 0-2 for receptive or expressive and a rating of 1-5 for articulation. Moderate-severe language with speech is defined as adapted Severity Rating Scale ratings of 3-5 for receptive or expressive and ratings of 1-5 for articulation.

individual item behavior problem profiles from the CBCl of the mild language only group were compared with the mild language with speech group as per Table 13. These profiles reflect the 13 highest mean rating scores for each group and are presented in Table 14. For each of the language only and language with speech groups at this mild severity level, the highest ranked 13 items were exactly the same. It is noted that the individual items did have different mean scores, suggesting some differences in parents' concerns. Although it is difficult to quantify the meaningfulness of such differences, it seems that in general when a child's language problems are mild, the additional burden of having an articulation/phonological disorder has relatively little effect on the main behavior problems that concern parents on the CBCl.

Insert Table 14 about here

Summary Goal 3

The relationships between the CD profiles and the social-emotional profiles did not support the hypotheses. In general, as the severity of the CD increased, there were no corresponding increases in the number of behavior problems nor lower social competence scores as reported by mothers using the CBCl. Although for children in the language only group did the correlation between the activity

Table 14

Mean Scores for the 13 Highest Behavior Problem Scale Items (CBCl) for both the Language Only and the Language and Speech Groups who have Mild Levels of Language Ratings

	Lang n=23	Lang + Sp n=23
#003 argues a lot	1.30	.87
#008 can't concentrate, can't pay attention for long	1.26	1.00
#079 speech problem	1.22	1.57
#019 demands a lot of attention	1.17	.83
#010 can't sit still, restless, or hyperactive	1.09	.87
#041 impulsive or acts without thinking	1.04	.74
#022 disobedient at home	1.04	.83
#063 prefers playing with older children	1.00	.87
#001 acts too young for his/her age	.91	.52
#095 temper tantrums or hot temper	.83	.65
#109 whining	.83	.70
#074 showing off or clowning	.74	.83

(table continues)

	Lang n=23	Lang + Sp n=23
#058 picks nose, skin, or other parts of body	.65	.91

Note. Mild language is defined as adapted Severity Rating Scale ratings of 0 - 2 for receptive or expressive language. Mild language with speech is defined as adapted Severity Rating Scale ratings of 0 - 2 for receptive or expressive and a rating of 1 - 5 for articulation.

subscale score of the social competence scale and the severity of CD approached significance. There was a significant negative correlation between the severity rating of externalizing problems and communication disorder. At the level of individual behavior problems, remarkably similar profiles were identified for both mild and moderate-severe communication disorder groups.For children with mild language impairments, having an additional articulation problem did not increase the behavior problems nor decrease the social competence ratings in the predicted direction. In addition, remarkably similar individual behavior problem profiles emerged for children with mild language impairments in terms of those who have language problems only and those with both language and speech problems.

Predicting Total Behavior Problem, Social Competence and Severity of Communication Disorder

Ratings from the demographic, family, communication, social-emotional, and/or other developmental information were used to identify potential risk factors relevant to the behavior problems, social competence, and CD of preschool children with SLI. In order to determine what variables account for the variance in total behavior problem and total social competence scores of the Child Behavior Checklist and in the communication composite score, plus their relative importance, a stepwise standard multiple regression procedure was used. These analyses were performed on a

variety of strongly associated variables based on cross-tabulation and correlational analyses or on theoretical/clinical considerations. In stepwise regression, variables are examined at each step for entry or removal from the equation according to a preset criterion of a probability significance of .05.

In terms of the correlational analyses, Table 15 presents the correlation coefficients for the variables that were considered for inclusion in the multiple regression analyses. Those variables that were significantly correlated with the total behavior problem score from Table 15 were included in the multiple regression analysis, except for the internalizing and externalizing T scores as they are not distinguishable from the total score in a clinical sense. In addition to the attention-deficit hyperactivity, spousal/friend relationship, and depression scores, the total social competence score, life stress, and socioeconomic status score were included in the multiple regression analyses because of clinical considerations.

Insert Table 15 about here

In terms of the cross-tabulation analyses to identify variables to include in the multiple regression analyses, Table 16 presents the significance levels of the chi-square statistics that were obtained when the relationships between

TABLE 15
Correlation Coefficients for a Variety of Study Variables (N=67)

Variables	TBP	INT	EXT	SOC	SES	LIF	DEP	SPO	EDU	NUM	ADH	COM	SPE	EXP	REC
TBP	---														
INT	.88**	---													
EXT	.84**	.66**	---												
SOC	-.07	-.16	-.12	---											
SES	-.16	-.15	-.16	.07	---										
LIF	.07	-.07	.13	.02	-.04	---									
DEP	.32*	.23	.29	.11	-.13	.40**	---								
SPO	.58**	.53**	.48**	.05	-.20	.21	.51**	---							
EDU	-.05	.00	-.15	-.07	.61**	.16	.02	-.12	---						
NUM	-.09	.05	-.11	.05	.11	.08	-.12	.07	.05	---					
ADH	.74**	.64**	.80**	-.20	-.07	-.02	.24	.42**	-.10	-.07	---				
COM	-.21	-.04	-.32*	.03	-.10	-.30	-.17	-.12	-.12	.05	-.23	---			
SPE	-.19	-.06	-.30	.16	-.12	-.18	-.19	-.02	-.18	.15	-.20	.72**	---		
EXP	-.10	.03	-.23	.05	-.04	-.25	-.06	-.04	.05	-.01	-.16	.84**	.37**	---	
REC	-.15	-.05	-.15	-.20	-.04	-.25	-.10	-.23	-.09	-.09	-.12	.64**	.01	.58**	---

Note: * P <.01, ** P <.001 (2 Tailed Significance)
TBP = Child Behavior Checklist: total behavior problem score
INT = Child Behavior Checklist: internalizing T score
EXT = Child Behavior Checklist: externalizing T score
SOC = Child Behavior Checklist: total social competence score
SES = socio-economic status rating (Hollingshead, 1975)
LIF = Parenting Stress Index: life stress subscale score (percentile)
DEP = Parenting Stress Index: depression subscale score (percentile)
SPO = Parenting Stress Index: spousal relationship subscale score (percentile)
EDU = highest level of education attained by Mother
NUM = number of children in the family
ADH = attention-deficit hyperactivity disorder rating
COM = adapted Severity Rating Scale: communication composite score
SPE = adapted Severity Rating Scale: articulation/phonological rating
EXP = adapted Severity Rating Scale: expressive language rating
REC = adapted Severity Rating Scale: receptive language rating

a variety of family related ratings (used previously to describe the sample) and both of the following: ratings of whether the total behavior problem score or the total social competence score were in the clinical range, and ratings of whether the child was in the mild or moderate-severe communication composite score subgroup. Few of the relationships even approached statistical significance, except for the parent relationship variable related to two-parent or single-parent status and birth order. Hence marital status of the family was the only other variable included in the subsequent multiple regression analyses.

Insert Table 16 about here

Goal 4a

For the dependent variable of total behavior problem score, stepwise multiple regression was performed on the following variables:

1. social competence scores (CBCl),
2. socioeconomic status scores (Hollingshead, 1975),
3. maternal depression subscale percentiles (Parenting Stress Index),
4. maternal spousal (friend) relationship subscale percentiles (Parenting Stress Index),

Table 16

Significance of the Chi-Square Statistic for the Association between Scores of Various Family Variables and of CBCl ratings plus the Severity Subgroupings for the Communication Composite Score (mild versus moderate-severe)

	clinical significance of total behavior problem score	social competence score	mild versus mod-severe communication composite score
sibling had a developmental problem	.57	.23	.93
parental history of developmental problem	.47	.65	.20
parental marital status	.04	.71	.72
birth order	.59	.09	.50

(table continues)

	clinical significance of total behavior problem score	of total social competence score	mild versus mod-severe communication composite score
medical problem during pre-, peri-, & postnatal period	.90	.73	.91
medical problem during infancy or preschool years	.43	.48	.38

5. attention-deficit hyperactivity disorder sum score based on three Child Behavior Checklist item ratings as described previously,
6. composite CD rating (adapted Severity Rating Scale),
7. articulation/phonological rating (adapted Severity Rating Scale),
8. receptive language rating (adapted Severity Rating Scale),
9. parent marital relationship status.

Together these variables accounted for 65% of the variance, R Square =.64766, F = 11.644185, p = .0000.

The standardized regression coefficient indicated the relative importance of the variables to be as follows: attention-deficit hyperactivity disorder sum score was the most important, beta = .59966, t = 7.207, p = .0000 and the maternal spousal (friend) relationship subscale percentile was the second and last variable in the equation, beta = .33039, t = 3.971, p =.0002. Thus, given the variables on which data were collected, the best predictors of total behavior problem score were the severity of attention-deficit hyperactivity disorder score and the degree of spousal/friend relationship, both as rated by mothers. In terms of spousal/friend relationship, mothers across all subjects were most concerned with: decreased maternal interest in sexual relations, decreased activities with

spouse/friend alone or as a family including the child(ren), and insufficient help/support.

Goal 4b

For the next dependent variable, total social competence score from the Child Behavior Checklist, stepwise multiple regression analysis included:

1. internalizing T scores (CBCl),
2. externalizing T scores (CBCl),
3. attention-deficit hyperactivity disorder sum scores based on three Child Behavior Checklist item ratings as described previously,
4. maternal depression subscale percentiles (Parenting Stress Index),
5. maternal spousal (friend) relationship subscale percentiles (Parenting Stress Index),
6. articulation/phonological rating (adapted Severity Rating Scale),
7. receptive language rating (adapted Severity Rating Scale),
8. birth order.

However, together these variables accounted for only 15% of the variance. The standardized regression coefficient indicated the relative importance of the variables to be as follows: receptive language rating was the most important, beta = -.23226, t = -1.936, p = .0573; attention-deficit hyperactivity disorder sum score was the second and last

variable in the equation, beta = -.22771, t = -1.898, p = .0622. Thus, there was only a very weak negative predictor relationship between the severity of receptive language scores and severity of attention-deficit hyperactivity disorder ratings and the degree to which a child had social competence problems.

Goal 4c

A similar investigation was completed to determine which variables accounted for the variance in communication composite ratings from the adapted Severity Rating Scale ratings provided by the speech-language pathologists and what their relative importance was. To this end a stepwise multiple regression was performed on the following:

1. total behavior problem score (CBCl),
2. externalizing T scores (CBCl),
3. attention-deficit hyperactivity disorder sum score based on three Child Behavior Checklist item ratings as described previously,
4. maternal spousal (friend) relationship subscale percentiles (Parenting Stress Index),
5. life stress subscale percentiles (Parenting Stress Index).

Together these variables accounted for only 18% of the variance. The standardized regression coefficient indicated the relative importance of the variables to be as follows: externalizing T score was the most important, beta =

-.28527, t = -2.484, p = .0156 and the life stress subscale percentile of the Parenting Stress Index was the second and last variable in the equation, beta = -.26406, t = -2.300, p = .0247. Thus, both the severity of externalizing problems and the degree of life stress have a mild inverse relationship in predicting the severity of the CD. The most common life stresses identified by the mothers as occurring during the last 12 months in the immediate family included: beginning a new job, moving to a new location, pregnancy, dramatic fluctuations in income, and the death of someone close.

Summary Goal 4

Multiple regression analyses were used to determine which variable best predicted the major parameters under investigation. The total behavior problem score was predicted by the ADHD score from the CBCl ratings and the maternal spouse/friend support subscale percentile of the Parenting Stress Index. The total social competence score was weakly predicted by the receptive language ratings from the adapted Severity Rating Scale and the ADHD score from the CBCl ratings. Finally, the communication composite score was weakly predicted by the externalizing T score (CBCl) and the life stress subscale percentile of the Parenting Stress Index.

Chapter VI

Discussion

The implications of the findings of this study for our knowledge of the communication, social-emotional, and family related characteristics of preschool children with SLI is complicated by a number of factors. This is not an epidemiological study, but rather it involves a voluntary clinical sample, and a matched control group was not used. Thus the representativeness of the sample in not clear. However, it is known that the children were obtained from both rural and urban centers throughout Alberta. It is also known that a small number of the mothers declined to participate, usually giving lack of time as a reason. Although the speech-language pathologists were required to approach the parent of every child who might fit the general guidelines for having a SLI, and all children were referred for speech-language services and not psychological services, this sample may not be representative of preschool children with SLI in general.

Reliance on mothers as reporters of their children's social-emotional difficulties does have limitations. Maternal depression, perception of spousal support, and recent life stresses were often identified as factors to be accounted for as potential biases for mothers' behavioral ratings of their children. However, as this sample had only

a very small proportion of mothers with clinically significant levels of these parenting stresses, the type and severity of behavior problem ratings probably reflect the clinical fact that parenting such children can be very difficult.

A final complication is that all the findings regarding the social-emotional problems were based on parent report without independent and/or direct observation/validation. Thus this study relies heavily on the inherent validity of the Child Behavior Checklist (CBCl) to reflect characteristic behavior and social competence problems. It also relies on the frequency of groups of behaviors as being the main measure of the severity of a child's social-emotional problems. Consequently, some differences in profiles might have been obtained if other empirical or diagnostic methods had been used.

Even in the extreme if it were possible to establish that the sample was biased toward having a preponderance of children with serious social-emotional problems, the fact that half of the boys and one third of the girls had such significant ratings of behavior problems co-occurring with their CD indicates that many theoretical, clinical, and research implications must be clarified. However, given the correlational nature of the current study, the observed relationships will not be interpreted to suggest causal directions.

Communication Characteristics

The findings for this carefully selected clinical sample of preschool children with SLI certainly illustrate their known heterogeneity of communication problems. Although voice and fluency problems were not identified, these children are characterized by considerable intra- and inter-child variability in terms of articulation/phonological, expressive language, receptive language, and conversational participation abilities.

The majority of the children have both speech and language problems, with a third of the sample having moderate to severe levels of receptive and/or expressive language problems. A small portion of this latter subgroup have language problems which were equivalent to or greater than 3 standard deviations below the mean for their chronological age. It is important to note that children in this latter group must have exceptionally well developed nonverbal cognitive and/or motor skills to have a normal range of overall general development and/or cognitive functioning. Overall, a characteristic profile of CD in terms of type and severity of deficits was not obtained.

Because the children were rated as having such a wide variety of styles of conversational participation within both severity levels of CD, there is further support for Fey (1986) who remarked that "children who display similar profiles of comprehension and production of language can

differ dramatically in their ability to communicate and to participate effectively in the exchange of information through discourse" (p. 98). In general, the children are not characterized as being passive, but there was a trend for those children with "pure" passive communicator ratings to have more severe communication disorders than those with "pure" active communicator ratings, who generally have mild levels of communication composite scores. In addition, with such different combinations of ratings being identified, the findings support the recommendation by Fey (1986) that when using the four potential styles of social conversation that "there should be no effort to force children into a group just for the sake of categorization" (p. 100). In addition, given that only 13% of the children were judged as having a normal pattern of conversational participation, this parameter of communication skill is certainly worthy of more investigation for children with SLI.

In spite of the statistically significant correlations between the speech-language pathologist's and mother's ratings of conversational participation, the apparent discrepancies from a clinical perspective may reflect a difficulty that mothers and/or speech-language pathologists have in understanding or matching the descriptions of the four categories of conversational participation to their actual experience with the child. This difficulty may signal a problem in the rating scale. However, the

discrepancies may simply reflect the possibility that individual children can often have a somewhat different conversational style with their speech-language pathologist than with their mother depending on the nature of the situation. The child may even interact differently in a particular setting over a period of time, depending on the demands of the situation, which calls into question the validity of seeking a generalized or characteristic style of conversational participation for any particular child with SLI. Thus the ambiguities in measurement described above for this rating scale suggest that it may have very limited research or even clinical usefulness in its current form. However the actual validity, or lack thereof, of the ratings must still be established by further research as described below, before its actual usefulness can be determined.

A final concern related to the children's communication characterisitisc involves the use of the term specific language impaired. Given the considerable heterogeniety observed in the sample regarding speech, language, and conversational participation skills, it may be that such a term may be quite misleading in its emphasis on language difficulties as being the primary characteristic of these children. Possibly researchers and clinicians should develop a multi-axial system of description that encompasses type and severity ratings of articulation, language, pragmatic, behavior problem, social competence, motor,

medical, and cognitive parameters rather than trying to classify children on the basis of presumed etiology, or lack thereof in the case of specific language impairment.

Social-emotional Characteristics

Compared to the non-clinical sample reported for the Child Behavior Checklist normative study (Achenbach & Edelbrock, 1981), the children in this sample seem to be at considerable risk for having clinically significant levels of both behavior and social competence problems. More specifically, boys seem to have a greater risk of having clinically significant levels of internalizing behavior problems than girls, but generally equal risk for clinically significant levels of externalizing and social competence problems. However, in terms of externalizing problems in particular, mothers reported boys to have such problems more frequently than girls. Boys and girls had similar levels of internalizing and social competence problems.

As with their CD, the children's social-emotional problems were characterized by considerable variability. However, a general pattern of frequently reported behavior problems did emerge which could negatively characterize these children. This social-emotional profile reflected attention-deficit hyperactivity disorder problems compounded by stubbornness, an argumentative manner, attention seeking, and a preference for playing with older children. In keeping with other research (Beitchman, Hood, Rochon, &

Peterson, 1989), the first parameter of an attention-deficit hyperactivity disorder (ADHD) seems particularly relevant. Fifty-eight percent of the sample were estimated to have significant ADHD problems.

At a clinical level the attentional difficulties of children with language impairments have been identified often, and it is not surprising that stubbornness and arguing follow when children have difficulty understanding what is expected of them and/or in communicating their needs. One response to difficulties in expressing personal needs in a appropriate verbal manner, may be to seek attention. A child with overactive, impulsive, and probably disruptive behavior may lead to other preschoolers seeking out playmates who are more ready to engage in reciprocal give and take, such as sharing toys and responding appropriately to communications. A preference for older children may reflect the benefit a child with both language impairments and attentional problems may gain from playing with a more tolerant older child who is not as demanding of reciprocal interaction from a younger child as a same-age peer and who can guide the child through a variety of play activities. Certainly preschool children with SLI may have limited opportunities for developing social-communication skills in their typical child care settings.

In spite of the numerous similarities in the overall individual item profiles between boys and girls, there was a

trend for girls to be differentially characterized by internalizing behavior problems. This finding provides support for a commonly held stereotype that girls are less active and more anxious than boys, that is, that girls have more emotional problems than conduct disorders; however given the small sample size for girls, the results must be viewed with considerable caution.

In terms of the narrow-band profiles, the Immature subscale for boys and the Social Withdrawal subscale for girls were identified as having the highest T scores and the greatest difference between this sample's scores and the non-clinical sample of the normative research group for the CBCl (Achenbach & Edelbrock, 1981). Both of these subscales are more in the internalizing than externalizing broad band of the CBCl. This finding for boys matches that of Tallal et al. (1989) and of Beitchman, Hood, Rochon, and Peterson (1989), but for girls the finding matches only Tallal et al. (1989), as Beitchman, Hood, Rochon, and Peterson (1989) identified the Sex Problem subscale as having the highest T score. However, given the considerable variability of the types of behavior problems at the level of the individual child, knowing that there may be a general trend toward internalizing problems probably has limited clinical utility.

Tallal et al. (1989) used the types of items included in the Immaturity and Social Withdrawal subscales as support

for their argument that preschoolers with SLI were characterized by neuropsychological problems rather than social-emotional problems as identified by the CBCl. Although this sample had the same prominent narrow-band scores as Tallal et al. (1989), analysis based on ranking the mean ratings of individual items that comprise these scales suggests a mixture of both potentially neuropsychological and social-emotional problems. However, it is uncertain whether the underlying basis for some of the social-emotional problems might be of a more neurological nature.

Relationships Between Communication and Social-emotional Profiles

Within the constraints of using the adapted Severity Rating Scale rather than a standardized battery of measures to identify the severity of each child's communication disorder, the general relationship between severity of communication problems and number of behavior problems was not found, as hypothesized. Only one significant relationship was identified by correlational analyses. Children with milder CD also tend to have greater externalizing problems than those children with more severe CD. This generalized trend is also reflected in the individual item behavior problem profiles in that children with mild CD were more often stubborn or irritable, with temper tantrums, while those with moderate-severe CD tended

to be rated as shy or timid, clinging to adults, or too dependent.

In terms of the relationship between severity of communication problems and the level of social competence problems, there was rather limited support for the hypothesis involving social competence. Thus, for the children who had language problems only, as the severity of their CD increased they tended to have more problems identified on the Activities subscale. Although this relationship is not statistically significant, it reflects limited involvement in sports, hobbies, activities, games, and/or jobs, but not in terms of number of organizations belonged to, frequency of contact or friendliness with peers, or ability to play by themselves.

Having speech and language problems versus only a language problem is not related to an increase or decrease in either the behavior or social competence problems of the children. Even at the individual behavior problem level, the profiles of the two groups were exceptionally similar. It is possible that in terms of social-emotional development the language capabilities of the child have the more powerful influence. It may be that the children with significant speech difficulties who were identified as having serious social-emotional problems in the literature often may have had unidentified language impairments that had an unknown influence on their social-emotional

development. However this comment is not to suggest that children with "pure" speech difficulties do not have significant social-emotional difficulties.

Characteristic subgroups of children with SLI who have associated characteristic social-emotional profiles still have not been identified. Given that the underlying cause(s) for such a relationship is probably multifactored and possibly somewhat different for each child, this pinpointing of characteristic relationships for a subgroup may not be possible. However, having an identifiable SLI is sufficient to signal a risk for serious social-emotional problems.

The severity estimate of attention-deficit hyperactivity disorder is the strongest predictor of the total behavior problem scores for the sample. Although the severity estimate of ADHD is obtained from the sum of three of the same 118 items that are used to derive the total behavior problem score and the expectation for correlation might be higher than with some unrelated measure, it is clinically significant that parent ratings of "can't concentrate, can't pay attention for long"; "can't sit still, restless, or hyperactive"; and "impulsive or acts without thinking" could predict 36% of the variance in the total behavior problem scores. A preschooler with SLI who has difficulty attending to instructions or task, sitting still, or waiting to respond seems to be at particular risk

for having serious social-emotional problems. This conclusion seems to support other researchers' findings that ADHD is a major factor in the psychological development of preschool children with SLI.

The maternal spousal relationship subscale percentile score was the second best factor for predicting the total behavior problem scores. The items of most concern to mothers reflect problems in intimacy, shared activities, and social support/help. Although 44% of the mothers who had percentile scores equal to or greater than the 75th percentile were single parents (8/18), they all completed this subscale and presumably in a manner reflecting the stresses in their relationships with a close friend. Given that the other 56% of these mothers who reported stressful spousal relationships when raising their children were in two-parent families (10/18), parenting a child with language, significant social-emotional, and ADHD problems is probably difficult and spousal support/marital relationships are quite reasonably a real issue for such parents. Bristol, Gallagher, and Schopler (1988) indicate that mothers of developmentally disabled children carry a disportionately heavy burden of the parenting compared with fathers and that mothers' marital adjustment is related to their partners' ability to be supportive. There may be a tendancy for mothers of preschool children with SLI to also carry a heavy burden of the parenting.

Although the overall severity of a CD is not predictive of the severity of social competence problems, the ratings of severity of receptive language problems is mildly predictive. Clinically this relationship could be hypothesized as the greater the receptive language problem, the more often social competence is problematic. Given the developmental relationships between social competence and communicative competence identified in the literature, this relationship is not surprising.

The severity estimate of ADHD also mildly predicted the severity of social competence problems, in that the higher the rating of ADHD was for a child, the more he or she also had social competence problems. Paul et al. (1983) also describe this relationship between social competence, receptive language, and attention-deficit hyperactivity disorder problems. At a clinical level this finding also is not surprising, as a child who has difficulties concentrating may also not attend to play tasks and hence have difficulty learning appropriate play or social skills which, combined with a CD, makes social interaction very difficult. However, this potential relationship is weak, as only 21% of the children estimated to have serious ADHD had clinically significant social competence scores.

The profile of social competence problems for children with clinically significant levels on the Social Competence scale indicated concerns with having limited participation

in groups and sports, having few household chores and doing them poorly, and having few close friends. These results suggest that the children have few opportunities for independence, and this may limit their opportunities and/or need to communicate. It may be that with their children's ADHD and receptive language problems, the parents find them quite difficult to teach, so consequently they do not expect as much help around the home from them. The fact that a child may have considerable problems understanding what is being said by others would certainly interfere with social relationships, particularly those involving activities outside the routines of the home involving friends, organizations, and doing sports. In addition, Stark, Tallal, and McCauley (1988) suggest that children with SLI may have subtle motor problems; perhaps these problems also contribute to the children's social competence difficulties, but are not recognized by parents, teachers, and physicians as requiring intervention. Thus this profile suggests that at least some of the children have limited opportunities for social experiences and hence language learning, except for whatever experience they gain in their community child care/educational settings.

The severity of the externalizing T score and the severity of the life stress subscale percentile score each have a mild inverse relationship in predicting the composite communication score, which reflects the severity of the

overall CD. Thus it seems that, as a group, the children with the more severe CD had fewer externalizing types of problems.

In terms of the negative relationship of the communication composite score with the life stress scores, it is also noted that none of the mothers had clinically significant life stress scores. However, even for those mothers who experienced a number of potentially significant life stresses such as beginning a new job, moving to a new location, pregnancy, significant fluctuations in income, and/or the death of someone close, this stress may not negatively affect their children's communication skill development. This observed relationship may suggest that the children's communication problems are more innate than environmentally based. The fact that a wide variety of other family and demographic related factors did not seem to be related to any of the social-emotional or CD profiles may also support this suggestion. However, it is possible that other factors still need to be investigated with this population. Richman, Stevenson, and Graham (1982) found that physical neglect, inconsistent maternal social responsiveness and infrequent peer play opportunities were implicated in the home environments of children who develop CD.

Clinical Description of Relationships Between Communication and Social-emotional Disorders

A clinical description of the relationships between the communication and social-emotional disorders as described earlier might include a hypothesis that preschool children with quite severe language impairments, particulary of a receptive nature, tend to not be as socially interactive as other children. Possibly these children reduce the stress they experience coping with their severe communication problems by avoiding social contact. Consequently they may not experience as many stressful events as children who are more outgoing.

Social-communication skills training can help such children become more assertive and interactive with peers (Croft, 1983); but increasing the rates of peer interaction may initially lead to increased stress for children with severe communication problems. Initially an increase in behavior problems may be reported as the child struggles to improve his or her social competence. Clinical experience indicates that with sufficient improvements in social, play, and communication skill and positive building of self-concept, that the child can eventually accommodate to increased rates of social interaction in a satisfactory manner.

Children with milder communication problems may be much more outgoing and socially interactive. Given their

reasoning skills, such children may be acutely aware of their communicative problems and the world may be even more frustrating, confusing, and full of the stress of uncertainty for them than for children with more severe communication problems who are less socially interactive. Although this stress is associated with serious externalizing problems, as they have more frequent social interactions they also have more opportunities for learning how to overcome their communication problems. The children can benefit from these opportunities if they are provided with appropriate coaching in social, communication, and play skills.

Attention-deficit hyperactivity problems seem to permeate the profiles of various subgroupings of preschool children with SLI. These problems probably severely complicate or limit their ability to learn improved or appropriate social-communication skills in natural situations without significant help from others. Certainly parenting the preschool child with SLI must be a difficult task when so much of the normal family interaction and routine independent activities with his or her parents, siblings, and peers at home have the potential to be such a struggle.

Relevant Theoretical Conceptualizations

The findings from this study raise a number of questions that would have implications for our general

knowledge about the processes that underlie the communication and social-emotional problems of preschool children with SLI. Although the implications of the severity of CD for the social-emotional problems of such children is explored in this study, there is still a considerable need to determine if there is an underlying causal relationship between attention-deficit hyperactivity disorder, social-emotional problems, parenting stresses, and SLI that can help us understand these children better.

Stark, Tallal, and McCauley (1988) hypothesize that a basic neural timing mechanism related to both verbal and nonverbal information is sufficient explanation for the presence of SLI. Given the positive relationship between receptive language and social competence problems, one of the conceptual links may be the difficulty the children have in processing what is being expected of them as communicated in verbal and nonverbal messages and then matching their response to the situation, which in turn leads to atypical styles of conversational participation. Individual differences in the type and severity of different information processing problems or the interaction between these problems, temperament, and/or social interaction patterns may have some explanatory power to account for the intra-group variabilities in social competence described earlier; however, determination of the potential role of such factors is beyond this study.

In addition, Beitchman, Hood, Rochon, and Peterson (1989) indicated that developmental immaturity may be the common link between language delay and ADHD, with children who have more generalized or pervasive communication problems being at greater risk for having ADHD. There is some evidence for this relationship in the current study, given the estimate that 58% of the sample could have significant levels of ADHD.

Baltaxe and Simmons (1990) provide evidence for a link between auditory processing problems, CD, and attention deficit-hyperactivity disorder as follows:

> The clearest examples of communication handicaps and psychiatric disorders that share underlying processing deficits are auditory processing deficits, which are commonly associated with communication disorders (Sloan, 1980a, 1980b; Tallal, 1980). Auditory processing deficits are also frequently associated with such psychiatric disorders as attention deficit hyperactivity disorder (ADHD) (Felton, Wood, Brown, Campbell, & Harter, 1987; Gascon, Johnson, & Burd, 1986). The authors' research with 480 inpatients showed that 51 of the 88 patients, with both a communication disorder and ADHD, had auditory processing deficits as measured by standardized tests (Baltaxe, 1988b). At the same time, communication problems were found in over 60% of the ADHD population in the author's prevalence study of 362 patients (Baltaxe, 1988a). These results parallel the findings of other investigators (Love & Thompson, 1988). (p.28)

This association between ADHD, auditory processing, and communication problems is also described by Prizant et al. (1990).

However, the processes that underlie these problems are not well understood, although neuropsychological processes are often researched (e.g., Stark, Tallal, & McCauley, 1988)

and central nervous system problems are considered a predisposing factor for ADHD in particular (DSM III-R). It is not known if there even is an underlying causal relationship between attention-deficit hyperactivity disorder, social-emotional problems, parenting stresses, and SLI, however there probably will not be simple explanations to describe the processes involved.

Of considerable concern to professionals working in the health care system is why only some preschool children with SLI have clinically significant levels of social-emotional problems and how we can identify those who need special treatment services. There may be theoretical perspectives that could shed light on some of the underlying transactional processes of what we do know now, or at least point to other key associated factors that need to be investigated yet.

Aram and Nation (1982) developed a multifactored model from the interactionist perspective for investigating the interrelationships between communication, behavior, cognitive processing, and environmental factors that holds some promise in the field. In addition, information from studies with the 0-3 age group may lead to a greater understanding of the early transactional nature of innate and environmental factors related to the development of both communication and social-emotional disorders. There is a growing body of knowledge related to the clinical

implications of these interactions for 0 to 3-year-old children (Theadore, Maher, & Prizant, 1990) that could provide a foundation for studies with older preschoolers.

Many clinicians and researchers have turned to variations on the normal developmental model for explanatory mechanisms to account for the unique patterns of communicative behavior in children with language impairments whose inter-system relationships are disrupted (Prutting, 1979). Kirchner and Skarakis-Doyle (1983) and Laughton and Hasenstab (1986) describe a "compensatory strategy" as a key component in the interactive processes that occur within and between the innate and environmental systems for any particular child. "The natural tendency of the language disordered child, as with any living organism, is to compensate when damaged in order to maintain a balance of systems. The end result is adaptation to communicative demands" (Kirchner & Skarakis-Doyle, 1983, p.224). Kirchner and Skarakis-Doyle (1983) suggest that the child will compensate by overusing his or her cognitive, linguistic, or social strengths. Laughton and Hasenstab (1986) hypothesize that children with CD may use behaviors such as activity level, gesture, demonstration, and/or withdrawal as strategies to compensate for their communication skill deficits. However, only some children will draw on problem behavior as a compensatory strategy (Laughton & Hasenstab, 1986). In addition they suggest that

parents develop related compensatory behaviors such as anticipating the children's needs or directing their behavior too often. How such processes might operate has not been established.

One aspect of the process by which children accommodate to their communication disorder may be the "goodness of fit" and "poorness of fit" perspectives on social relationships and the impact of behavior and communication problems in the family and peer systems that Thomas and Chess (1980) describe in terms of temperament characteristics. Liden, Clingan, and Laurie (1985) illustrate how a transactional approach to investigating the relationships between temperament and attention problems in children could guide clinical and research activities. Although there is controversy as to what constitutes temperament and its value as a construct for understanding development (Goldsmith et al., 1987), there is great potential for a mismatch between a child with social-emotional, communication, and attention-deficit hyperactivity disorder and the child's family and/or peer systems.

In summary, a number of theoretical perspectives (interactionist, compensatory strategies, and temperament) hold promise for eventually understanding why only certain preschool children with SLI have significant levels of, or a particular range of, social-emotional problems.

Implications for Research

As with most research studies, the findings point to other pieces of the puzzle that need to be investigated in order to create a clearer picture of the relevant processes involved in the social-emotional problems of preschool children with SLI. This project is an initial stage in a potential research process related to the use of field observation and clinical experience to generate an a priori performance model (Patterson, 1986). The strong predictive relationship between ADHD and social-emotional problems is a beginning step in developing a model for such children. Given the extensive subject descriptions provided in this project, other clinicians and researchers can readily determine the applicability of the findings to children of their interest. Given the efficient nature of the measures used, the research strategy could form the basis for studies in other public health settings that might involve some of the following:

1. replication of the findings with other samples of SLI;
2. a representative sample in an epidemiological study;
3. investigation of other potentially related variables such as temperament;
4. more valid and reliable means to measure ADHD (Edelbrock & Rancurello, 1985; Rosenberg, Wilson, & Lagenhausen, 1990);
5. clinical case studies and/or longitudinal studies to

investigate hypothetical models of causality between psychiatric and CD, particularly as they involve ADHD (Prizant et al., 1990);

6. multiple sources of social-emotional diagnostic information to augment the mothers' CBCl ratings, for example, fathers' ratings, behavioral observation in multiple settings, psychological testing, interviews with parent and child, and/or psychiatric diagnosis;
7. the full Parenting Stress Inventory and the full Minnesota Child Development Inventory;
8. consideration of procedures to weigh the influence of the separate speech and language ratings from the adapted Severity Rating Scale for the purpose of refining the communication composite score;
9. investigation of the validity and reliabililty of the adapted Severity Rating Scale in actual clinical practice, including further consideration of the adequacy of the current procedure of determining who fits the criteria for specific language impaired given concerns raised by Lahey (1990) regarding comparing language ages to presumed mental ages.
10. investigation of the validity and reliability of the rating scale of conversational participation by concurrently using the behavioral observational rating procedures developed by Fey (1986); and finally,
11. consideration of specifying social scenarios for the

rating scale of conversational participation in order to provide a context for both parents and speech-language pathologists to mentally place the child within and then rate how the child might interact.

Implications for Clinical Services

The social-emotional problems of many preschool children with SLI are real and significant. The parenting stresses related to caring for a child with a significant communication, social-emotional, and attention-deficit hyperactivity disorder are considerable. Any preschool child with a clinically significant level of SLI is a candidate for preventive mental health services.

Strayhorn and Strain (1986), in their review of preventive mental health interventions for children in general, identified three broad-band competencies that should be developed as follows:

> 1. The ability to be kind, cooperative, and appropriately compliant, as opposed to having a prevailing habit of being hostile and defiant.
> 2. The ability to show interest in people and things, to be appropriately outgoing, to socialize actively, as opposed to being withdrawn, fearful, and shy.
> 3. The ability to use language well and to have a command of a wide range of vocabulary and syntax such that ideas may be both comprehended and expressed with facility. (p. 288)

The relevance of the first two competencies for the mental health of preschool children is supported by a wide variety of factor analytic studies of internalizing and externalizing dimensions of behavior (Achenbach & Edelbrock, 1983; Fischer, Rolf, Hasazi, & Cummings, 1984) and certainly

features prominently in this study. The relevance of the third factor for children with SLI is unquestionable.

Although there are limitations in the public health system related to the availability of qualified staff and financial resources to provide the mental health services, early identification is essential for such high risk children (Prizant et al., 1990). From the perspective of a cumulative stress or risk hypothesis, "which asserts that psychological disorder emerges as a consequence of multiple risk factors that combine interactively to hamper normal development" (O'Grady & Metz, 1987), the earlier we can successfully intervene, the less entrenched a negative interaction pattern will be, and the easier it will be to teach alternative social communication patterns.

Although speech-language pathologists may have a positive impact on ameliorating behavior problems, such therapy alone does not directly provide treatment for serious social-emotional disorders, and it may not be sufficient to prevent a further cycle of educational failure. Parents need to be advised by speech-language pathologists to consult with their pediatrician regarding a referral for psychological and/or psychiatric evaluation. Given the reciprocal relationships between social and communicative competence, it is reasonable to assume that improvements in a child's social-emotional development and attention skills will improve that child's ability to

benefit from speech-language therapy. The child may also benefit more from his or her parents' and teacher's efforts to extend the therapy and generalization strategies into non-clinic settings.

The speech-language pathologist, psychologist, medical specialist, and parents often need to work closely together and share strategies to meet the communicative, social, cognitive, and emotional needs of the child (Laughton & Hasenstab, 1986). Screening for a wide variety of psychological and family stresses is needed for all preschool children with SLI, and essential for all who may have ADHD and/or receptive language problems. Stark, Tallal, and McCauley (1988) also identify those with receptive language impairments as being at greatest risk for continued communication problems in spite of communication therapy. Parents and child care workers can observe a considerable range of their children's behavior in many contexts over a long period of time. It is particularly important to start from the parents' perspective of the problems, as they will be key agents in seeking services for their children and in providing whatever intervention is necessary. As the child becomes more effective at appropriate participation in family and peer systems, he or she must certainly experience increased opportunities for language learning, particularly as frustration, confusion, and uncertainty subside in these systems.

Direct and indirect screening measures need to include questions that survey the parents' concerns at least regarding social interaction, emotional reactions, ADHD, temperament, medical history and general development, and parenting stresses. For parents who are obtaining speech-language services for their children from a public health facility that has psychological, psychiatric, and/or pediatric services, then some of the parents' concerns from the screening measures can be further evaluated by interviewing, observational, and formal testing procedures.

Increasingly in the literature, clinicians and researchers are calling for multiple techniques, measures, and persons to be included in the determination and intervention of social-emotional disorders (Achenbach, McConaughy, & Howell, 1987). Diagnostic screening might involve parents, teachers, and child care workers completing a general history questionnaire and/or published scales such as the CBCl, Parenting Stress Index, Conners Parent-Teacher Questionnaire, and Minnesota Child Development Inventory. These latter published scales provide increased validity, reliability, and a normative developmental perspective, although Ullmann, Sleator, and Sprague (1985) indicate that there is controversy surrounding the validity of the widely used Abbreviated Teacher Questionnaire by Conners (1973). However, for many children diagnostic evaluation needs to go beyond the inherent limitations of checklists and rating

scales to involve psychiatric diagnostic procedures too (Reisman, 1986). Effective measures need to be used to determine which of all the children being screened probably need intensive psychological and/or medical services in addition to those provided by the speech-language pathologist. Interdisciplinary collaboration should be the working model for provision of such multimodal evaluation and treatment services (Culbertson, Norlin, & Ferry, 1981; van Kleeck & Richardson, 1986).

As many speech-language pathologists provide their services in relative isolation from psychologists, psychiatrists, and/or pediatricians, they must be sensitive to associated medical, social, cognitive, and family factors in the diagnosis and treatment of children with CD. This may be particulary true for those children who are suspected of having ADHD and whom speech-language pathologists are often asked to evaluate, because they "are easily distracted, have difficulty following instructions, and do not seem to listen to what is being said to them" (Prizant et al., 1990, p. 184). Prutting (1982) states that speech-language pathologists' intervention goals have always been directed toward "shaping social growth of the individual with a communicative handicap" (p. 132). Given that only 14% of the children in this study had normal ratings of conversational participation, there is a considerable need for speech-language pathologists to be involved in

developing strategies that target social competence. The rating scale of conversational participation used in this study may be useful even in its current form. Both parents and the speech-language pathologist could complete the form, and perceived differences could become one basis for further discussion or observation to clarify the child's manner of social-communication under different conditions.

Those speech-language pathologists who work in multidisciplinary settings need to become very familiar with the whole mental health perspective (Baltaxe & Simmons, 1990) and with the terminology and the communicative competence aspects of current psychiatric diagnostic practice (Prizant et al., 1990), so they can have a significant impact on the provision of treatment services for children with communication and/or psychiatric disorders (Audet & Hummel, 1990). Prizant et al. (1990) give an excellent account of how speech-language pathologists can pursue these clinical services in a multidisciplinary setting.

There are many roles for a psychologist providing services for a child with a communication and social-emotional disorder and his or her family. The significant others in such a child's world need to fully appreciate the nature of the child's CD and participate in developing intervention strategies. During family counselling a number of themes related to "poorness of fit" between the child and

his or her social world may emerge, which may be far more important than the actual temperament characteristics of the individual (Thurman, 1985).

With "goodness of fit" between significant others and the child in terms of their understanding of the child's struggle toward task mastery and social competence, their reactions may be tempered by this knowledge and provide an energy for creative problem solving as to how to teach the child more effective and appropriate social-communicative behavior (Thomas & Chess, 1980; Thurman, 1985). In this regard, a perspective on children's social-emotional behavior and its communicative intent or function sometimes known as the "communication hypothesis" (Carr & Durand, 1985; Prizant & Wetherby, 1987) has yielded some procedures for effective and non-aversive behavior change (Burke, 1990).

For psychologists using the CBCl with preschool children referred because of initial concerns regarding their social-emotional behavior, it may be that if the Immaturity subscale for boys or the Social Withdrawal subscale for girls is elevated or if the majority of individual items most commonly seen in children with SLI are reported, then further investigation as to the child's communicative competence may be warranted.

Parents of a child with a significant communication, social-emotional, and/or attention-deficit hyperactivity

disorder may need some help in determining positive social-emotional characteristics that treatment strategies can be built upon. Although clinical experience has shown that improvements in the child's language understanding and use often spills over to improvements in social-emotional functioning, the family may need help in being realistic in their expectations for the child rapidly catching up to peers' levels of competence and maintaining this improved performance over time by sending their child solely for speech and language therapy services.

In Alberta many preschool children receive speech-language treatment services from clinicians in the publicly funded and community based boards of health who work in relative professional isolation except for periodic contact with their peers and consulting physicians. Psychological and/or psychiatric services for chidren are limited, and even procedures for screening for associated developmental disorders as illustrated in this study can be quite limited. Referrals for psychological or psychiatric services are often made only after it has been clearly demonstrated that the child is not making developmental progress with speech-language intervention and that a cognitive and/or emotional disorder is suspected as the cause.

However, in a center such as the Glenrose Rehabilitation Hospital, multidisciplinary services for such children are available from infancy onwards. In particular there are a

number of model family focused diagnostic-treatment programs in which speech-language pathologists, and psychologists, and early childhood educators provide services in an interdisciplinary manner through the development of joint assessment methods and treatment goals/strategies that involve the parents' full participation. There are multiple entry points into this system as children are referred at different ages and have different needs. In addition, as children grow in their social-emotional and communicative skills and families learn to cope and adapt, less intensive or more specifically focused services are available within the hospital. However, a strong emphasis is placed on maintaining children in normalized community and home settings.

The specialized services in the hospital provide a setting for experimentation in appropriate intervention strategies with the child, while concurrently providing a setting for demonstration and consultation with the child's family, teacher, and/or child care workers. This consultation often involves numerous community program and home visits to assist in the generalization of treatment gains; to provide enriched opportunities for communicative, cognitive, and social-emotional experiences; and to improve the "goodness of fit" between the child and his or her social environment. Given the discrepancies in service options between community based public health clinics and

specialized hospital based facilities, there is a need for considerably more collaborative and outreach focused service from the hospital based clinicians.

Summary of Discussion

This study adds to our knowledge of the communication, social-emotional, and family related characteristics and needs of preschool children with SLI. Although the study is limited by the use of a clinical sample and a single measure of social-emotional development, mothers' ratings on the CBCl, the evidence supports the clinical observations of considerable heterogeneity in communication, social-emotional, and family characteristics for such children. The strengths of the study are its grounding in actual clinical practices, the precision of the criteria by which the children were selected, and the investigation of complex issues related to the type and severity of social-emotional problems of children with a variety of type and severity profiles of SLI.

Although a characteristic profile of speech, language, and/or style of conversational participation was not obtained, a number of individual behavior problems were frequently reported for both boys and girls that could negatively characterize the sample. In general, the sample is at great risk of having a clinically significant range of social-emotional problems and attention-deficit hyperactivity problems in particular. For children with

SLI, those with the most severe CD tend not to have the most social-emotional problems. As such, simply having a clinically significant SLI is sufficient to signal the child's risk for serious social-emotional problems. Such children with attention-deficit hyperactivity disorders, receptive language problems, and mothers who have concerns about spousal relationships seem to be at particular risk for having significant levels of behavior and social-competence disorders.

Conceptual links between cognitive, communication, ADHD, and social-emotional problems were explored as a potential basis for an underlying causal factor common to each area of developmental disorder. A variety of theoretical perspectives (interactionist, compensatory strategy, and temperament) hold promise as models to explain some of the transactional processes for why only some of the children have clinically significant levels of social-emotional problems. However, how such processes operate is not clear. Thus there are numerous opportunities for follow-up research, particulary as the research strategy used in this study is so portable to other clinical centers.

The implications of the findings for the public health service delivery system involve the following:

1. multimeasure screening for psychological concerns;
2. speech-language pathologists, parents, psychologists, and medical practitioners working closely together;

3. improvements to speech-language pathologists' functional knowledge of the communicative aspects of psychiatric disorders and of how to apply their treatment strategies to children with serious communication and social-emotional problems;
4. the role of the psychologist in counselling parents of children with communication and social-emotional problems.

Although psychological and/or psychiatric services are very limited in the boards of health of Alberta, and particularly those in rural areas, a number of model programs that feature integration of speech-language pathology and psychology services are available at the Glenrose Rehabilitation Hospital. There is a significant need for increased collaborative and outreach focused services between the highly specialized hospital based clinicians and those of the community based public health system.

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Appendix 1 General Information and History Questionnaire
(for the child's parent to complete)

I. CHILD: patient number/___/___/___/___/___/___/___/___/

2. Birthdate_____ Gender:Male___Female___
day month year

THE FOLLOWING QUESTIONS ARE RELATED TO THE CHILD'S DEVELOPMENTAL HISTORY, FAMILY CONCERNS AND CURRENT EDUCATIONAL OR TREATMENT STATUS.

3. Does your child have brothers and sisters? YES___ NO___
If yes, please write down their ages and gender. Please indicate if they have significant speech, language or developmental problems

_____

_____

4. Family history - please mark X for any difficulties either a natural or current parent has experienced:
a. /___/ school learning problems
b. /___/ speech or language problems
c. /___/ mental handicaps
d. /___/ hearing impairment
e. /___/ mental health problems
f. /___/ other _____

5. Are there any known problems or accidents related to the pre-birth, birth or immediate post-birth time periods which may have had an impact on your child's development?
YES___NO___ If yes, please explain _____

_____

6. Did your child achieve sitting, walking, and toilet training at the same time as most other children?
YES___NO___ If no, please explain

_____

7. Mark with an X if your child has experienced any of the following:
a. /___/ seizures requiring anti-convulsive medications
b. /___/ frequent earaches or ear infections
c. /___/ serious head injury or accident
d. /___/ frequent respiratory infections
e. /___/ excessively high fever

f. /___/ allergies _____

g. /___/ tubes into ears
h. /___/ physical abnormalities (face/body)
i. /___/ fine or gross motor coordination problems requiring adaptations, equipment or treatment
j. /___/ other (severe asthma, diabetes, cystic fibrosis, accidental poisoning, meningitis, encephalitis

please describe) _____

k. If your child wears glasses, is your child's eyesight normal with corrective lens? YES___NO___

8a. Please describe any recurrent medical problems or physical conditions: _____

8b. Does your child have a medical diagnosis for a developmental condition? YES___NO___ Please describe

_____

9. Please list any medication(s) your child is presently taking and give the reason:

_____

10a. Has your child ever had a screening test of hearing ability? NO___YES___

10b. Has your child ever had a professional audiological examination? NO___YES____

10c. If yes, please indicate what the results were

_____

10d. If your child has a sensorineural hearing loss, does he or she wear hearing aides? NO___YES___.

10e. If your child had or has a conductive hearing loss, how many months did it last for during the longest period of illness? _____ months.

11a. Please mark whether your child has previously attended any of the following for at least one month:

/____/ kindergarten /____/ day care /____/ babysitter
/____/ special needs preschool /____/ playschool

11b. Please mark whether your child currently attends any of the following on a regular basis:

/____/ kindergarten /____/ day care /____/ babysitter
/____/ special needs preschool /____/ playschool

12. Has your child ever been provided with psychological assessment or treatment services? YES___NO___ If yes, please explain the nature and duration of the services

_____

13a. Please estimate your child's range of current mental/cognitive functioning by placing a checkmark as follows:
above average /___/ average /___/
below average /___/ mentally handicapped range /___/
13b. Briefly describe what the estimate is based upon (e.g., your own observations or knowledge of formal intelligence

test results, or ?)_____

14. Has your child ever been provided with individual or group speech-language treatment services? YES___NO___

THE FOLLOWING QUESTIONS ARE OF A MORE PERSONAL NATURE ABOUT THE FAMILY. THE INFORMATION WILL BE USED ONLY FOR THE PURPOSE OF ESTABLISHING YOUR FAMILY'S SOCIO-ECONOMIC STATUS AND STRESS LEVELS. YOUR INDIVIDUAL FAMILY'S INFORMATION WILL NOT BE REPORTED ANYWHERE OR TO ANYONE. THE SPEECH-LANGUAGE PATHOLOGIST DOES NOT LOOK AT THESE RESPONSES. THE INFORMATION WILL BE GROUPED WITH THE INFORMATION FROM MANY OTHER FAMILIES AND WILL BE USED FOR THE PURPOSES OF THIS RESEARCH PROJECT ONLY.

15. At present, child resides with:
/___/ Both natural parents
/___/ One natural parent: Mother ___ or Father ___
/___/ Adoptive parent(s)
/___/ Foster parent(s) or guardian(s)
/___/ One natural parent and one step-parent

16. What is the father's occupation? Please describe his present job and the type of organization he works in. (If he is not presently working outside of the home, please indicate present situation, e.g., homemaker, student, unemployed, and whether he receives financial support and from where/whom does he receive it, for example: alimony, social assistance, disability pension)

_____

17. What is the mother's occupation? Please describe her present job and the type of organization she works in. (If she is not presently working outside of the home, please indicate present situation, e.g., homemaker, student, unemployed, and whether she receives financial support and from where/whom does she receive it, for example: alimony, social assistance, disability pension)

_____

18. What grade was completed at school?	Father	Mother
a. less than 7th	_____	_____
b. 9th	_____	_____
c. 10th or 11th	_____	_____
d. highschool graduate	_____	_____
e. at least 1 year post-highschool	_____	_____
f. university graduate	_____	_____
g. graduate degree	_____	_____

PLEASE MARK HOW MUCH YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS* BY FILLING IN ONE OF THE NUMBERS WHICH COMES CLOSEST TO DESCRIBING OR MATCHING HOW YOU FEEL. YOUR FIRST REACTION TO EACH QUESTION SHOULD BE YOUR ANSWER. IF YOU ARE NOT SURE FILL IN #3 IF THE QUESTION DOES NOT APPLY, FILL IN #6.

1. STRONGLY AGREE
2. AGREE
3. NOT SURE
4. DISAGREE
5. STRONGLY DISAGREE
6. DOES NOT APPLY

19. /___/ When I think about the kind of parent I am, I often feel guilty or bad about myself.

20. /___/ I am unhappy with the last purchase of clothing I made for myself.

21. /___/ When my child misbehaves or fusses too much I feel responsible, as if I didn't do something right.

22. /___/ I feel every time my child does something wrong it is really my fault.

23. /___/ I often feel guilty about the way I feel towards my child.

24. /___/ There are quite a few things that bother me about my life.

25. /___/ I felt sadder and more depressed than I expected after leaving the hospital with my baby.

26. /___/ I wind up feeling guilty when I get angry at my child and this bothers me.

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1. STRONGLY AGREE
2. AGREE
3. NOT SURE
4. DISAGREE
5. STRONGLY DISAGREE
6. NOT APPLICABLE

27. /___/ After my child had been home from the hospital for about a month, I noticed that I was feeling more sad and depressed than I had expected.

28. /___/ Since having my child, my spouse (male/female friend) has not given me as much help and support as I expected.

29. /___/ Having a child has caused more problems than I expected in my relationship with my spouse (male/female friend).

30. /___/ Since having a child my spouse (or male/female friend) and I don't do as many things together.

31. /___/ Since having my child, my spouse (or male/female friend) and I don't spend as much time together as a family as I had expected.

32. /___/ Since having my last child, I have had less interest in sex.

33. /___/ Having a child seems to have increased the number of problems we have with in-laws and relatives.

34. /___/ Having children has been much more expensive than I had expected.

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DURING THE LAST 12 MONTHS, HAVE ANY OF THE FOLLOWING EVENTS OCCURRED IN YOUR IMMEDIATE FAMILY? PLEASE CHECK OFF ANY THAT HAVE HAPPENED.

35. /___/ Divorce 36. /___/ Marital reconciliation

37. /___/ Marriage 38. /___/Separation 39. /___/ Pregnancy

40. /___/ Other relative moved into household

41. /___/ Income increased substantially (20% or more)

42. /___/ Went deeply into debt

43. /___/ Moved to new location 44. /___/ Promotion at work

45. /___/ Income decreased substantially

46. /___/ Alcohol or drug problem

47. /___/ Death of close family friend

48. /___/ Began new job 49. /___/ Entered new school

50. /___/ Trouble with superiors at work

51. /___/ Trouble with teachers at school

52. /___/ Legal problems

53. /___/ Death of immediate family member

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RATING SCALE OF A CHILD'S SOCIAL CONVERSATIONAL STYLE
(PARENT) (*)

I. CHILD number /___/___/___/___/___/___/___/___/

INSTRUCTIONS:

Please read the descriptions on the next page and think about the conversations that your child has with you at home. Please read all the descriptions at least once before doing the following:

In the box beside every description, please mark one number for your child according to the guidelines given at the top of the next page. You are to consider your child's willingness to begin conversations with you and to respond to you during conversations. Your judgment should take into account what you think are reasonable expectations for other children with similar language abilities.

* please note that these descriptions involve a synthesis or paraphrasing by the researcher, Donald Croft, of the specific words or comments used by Dr. Marc E. Fey of the Department of Communicative Disorders at the University of Western Ontario to describe the four classifications of social conversation that he proposes in his 1986 text Language Intervention with Young Children published by College-Hill Press in San Diego, California (Fey, 1986).

INSTRUCTIONS:

please mark only one number in each and every box

0 generally not true of my child
1 somewhat or sometimes true of my child
2 very true or often true of my child

19. /___/ My child willingly and actively starts conversations with me. My child responds to my requests or comments as much as I would expect. My child seems to have a sincere desire to communicate information to me. My child makes good use of the language skills he or she has. However, sometimes it may be difficult to figure out what he or she is trying to tell me. (AC)

20. /___/ My child willingly participates in conversations, but it seems that he or she tends to "speak only when spoken to". My child tends not to ask questions nor start discussions very often. Generally, my child is not assertive. My child actively and willingly answers my questions, but sometimes the answers may be very limited and not add new information in a way that could help to keep the conversation going. (PC)

21. /___/ My child often seems unwilling or disinterested in responding to my questions or comments, except with a bare minimum of information. My child does not often approach me or ask me something, except under particular circumstances, such as when he or she really wants me to get something. Even though my child has the language abilities to participate more, he or she does not socially interact with me as much as I would expect. (IC)

22. /___/ My child can be quite talkative and often starts conversations or initiates social contact. However, my child has difficulties in either starting an appropriate topic of conversation or staying on topic. Sometimes I struggle without much success to understand and follow the "thread of ideas" of what my child is trying to tell me. I struggle because my child's words or phrases often have very limited or no relationship to what he or she said before, or sometimes to what I just said. (VN)

THANK YOU FOR YOUR TIME AND EFFORTS, YOUR INFORMATION WILL PROVE TO BE MOST HELPFUL TOWARDS SUCCESSFUL COMPLETION OF THE PROJECT.

Appendix 2 General Development Scale

The speech-language pathologist will fill in your child's ID # here > /____/____/____/____/____/____/____/____/

PARENTS PLEASE NOTE: Your observations of your child can provide important information about your child's development and this General Development Scale is a means of gathering this information. As children grow and develop from birth to school age, many changes occur in their behavior. Some of these changes are temporary but are steps toward more mature and permanent behaviors. A good example is the way children learn to move from place to place. At birth, infants can do little more than kick and thrash their arms. As they grow, they learn to roll. Later, they learn to crawl, and still later to walk and run. When walking and running come in, they stay, but rolling and crawling drop out as more mature behaviors develop. A similar, step-like development occurs in learning to talk from babbling and learning to write from scribbling.

INSTRUCTIONS : In a moment you will be completing the General Development Scale. You will be reading statements describing behaviors of children. It is important to remember that statements describing past behaviors of your child should be answered YES, as well as statements describing your child's present behaviors should be answered YES. If the statement does not describe your child's past or present behavior, answer NO. Answer YES or NO by what you have seen your child do, not by what you think he may be able to do. Answer YES or NO by checking off the correct box beside the number of each statement. The care with which you answer each statement will determine the accuracy with which the Scale pictures your child's development.

TODAY'S DATE: YEAR_____MONTH_____DAY_____

* questions and instructions are adapted from the Minnesota Child Development Inventory (Ireton & Thwing, 1972)

(Note. this format was developed by Donald Croft for the purpose of this research project only and with the permission of Dr. H. Ireton)

Yes/___/ No/___/ 001. Walks without help.
Yes/___/ No/___/ 002. Unbuttons one or more buttons.
Yes/___/ No/___/ 003. Says two or more words clearly.
Yes/___/ No/___/ 004. Rides tricycle using pedals.
Yes/___/ No/___/ 005. Says thank you.
Yes/___/ No/___/ 006. Feeds self a cracker or cookie.
Yes/___/ No/___/ 007. Refers to other children as boys/girls correctly.
Yes/___/ No/___/ 008. Prints the numbers 1 through 9.
Yes/___/ No/___/ 009. Washes and dries hands.
Yes/___/ No/___/ 010. Understands the meaning of at least three prepositions- for example, in, on, beside, under.
Yes/___/ No/___/ 011. Counts three or more objects.
Yes/___/ No/___/ 012. Prints two or more simple words from memory.
Yes/___/ No/___/ 013. Refers to self as boy or girl correctly.
Yes/___/ No/___/ 014. Buttons one or more buttons.
Yes/___/ No/___/ 015. Dresses and undresses without help.
Yes/___/ No/___/ 016. Colors within the lines in a coloring book.
Yes/___/ No/___/ 017. Gets excited about approaching birthday or holiday involving presents.
Yes/___/ No/___/ 018. Asks questions beginning with "why."
Yes/___/ No/___/ 019. Plays simple table games, such as checkers.
Yes/___/ No/___/ 020. Holds 2 objects at the same time, one in each hand.
Yes/___/ No/___/ 021. Ties shoelaces.
Yes/___/ No/___/ 022. Refers to his (her) things as "mine" or"my...".
Yes/___/ No/___/ 023. Smiles.
Yes/___/ No/___/ 024. Uses short sentences to express simple ideas.
Yes/___/ No/___/ 025. Puts shoes on the correct feet.
Yes/___/ No/___/ 026. Prints first name.
Yes/___/ No/___/ 027. Says "Hi."
Yes/___/ No/___/ 028. Laughs.
Yes/___/ No/___/ 029. Draws recognizable pictures.
Yes/___/ No/___/ 030. Helps with little household tasks.
Yes/___/ No/___/ 031. Says when something is heavy.
Yes/___/ No/___/ 032. Draws pictures which include more than one object, such as a house and a tree, or a man and a dog.
Yes/___/ No/___/ 033. Draws or copies circles.
Yes/___/ No/___/ 034. Sits without support.
Yes/___/ No/___/ 035. Rides a two-wheeled bike.
Yes/___/ No/___/ 036. Operates a gum machine.
Yes/___/ No/___/ 037. Says his (her) own first name when asked "What's your name?"

Yes/___/ No/___/ 038. Says "Please."
Yes/___/ No/___/ 039. Asks questions beginning with "what."
Yes/___/ No/___/ 040. Throws a ball while standing.
Yes/___/ No/___/ 041. Lifts a cup to his (her) mouth and drinks.
Yes/___/ No/___/ 042. Buttons a shirt, blouse, or coat, having all the buttons in the correct holes.
Yes/___/ No/___/ 043. Toilet trained for bowel movements.
Yes/___/ No/___/ 044. Insists on feeding self.
Yes/___/ No/___/ 045. Sometimes says "No" when interfered with.
Yes/___/ No/___/ 046. Recites the alphabet in order.
Yes/___/ No/___/ 047. Cuts with scissors, following a simple outline or pattern.
Yes/___/ No/___/ 048. Kicks a ball.
Yes/___/ No/___/ 049. Looks at picture book, holds the book right side up.
Yes/___/ No/___/ 050. Pulls self to a standing position.
Yes/___/ No/___/ 051. Asks the meaning of words.
Yes/___/ No/___/ 052. Tells where he (she) lives by street and number.
Yes/___/ No/___/ 053. Points to at least three body parts, such as eyes, nose, mouth, hands, or feet, when asked to do so.
Yes/___/ No/___/ 054. Points.
Yes/___/ No/___/ 055. Draws a picture of a man/woman that has at least 6 parts, such as head,body,arms,legs,eyes,nose,mouth.
Yes/___/ No/___/ 056. Tells whether a sound is loud or soft.
Yes/___/ No/___/ 057. Whispers.
Yes/___/ No/___/ 058. Uses at least five words.
Yes/___/ No/___/ 059. Knows how many fingers there are on each hand.
Yes/___/ No/___/ 060. Counts to 100 by ones without help.
Yes/___/ No/___/ 061. Recognizes and names at least five capital letters of the alphabet.
Yes/___/ No/___/ 062. Identifies familiar things seen on T.V.
Yes/___/ No/___/ 063. Turns pages of picture books one page at a time.
Yes/___/ No/___/ 064. Runs.
Yes/___/ No/___/ 065. Transfers objects from one hand to the other.
Yes/___/ No/___/ 066. Opens door by turning knob.
Yes/___/ No/___/ 067. Asks questions beginning with "when."
Yes/___/ No/___/ 068. Tells about things that happened 2/3 days before.
Yes/___/ No/___/ 069. Names at least three body parts, such as eyes, nose, mouth, hands, or feet, when asked to do so.
Yes/___/ No/___/ 070. Knows right hand from left hand.

Yes/___/ No/___/ 071. Offers to help others.
Yes/___/ No/___/ 072. Understands the meaning of "up" and "down".
Yes/___/ No/___/ 073. Identifies at least one color correctly.
Yes/___/ No/___/ 074. While sitting, leans forward to obtain objects out of reach.
Yes/___/ No/___/ 075. Cuts across paper with scissors from one side to the other.
Yes/___/ No/___/ 076. Uses at least 10 words.
Yes/___/ No/___/ 077. Asks questions beginning with "who".
Yes/___/ No/___/ 078. Uses at least one pronoun, such as "me," "I," "he," "she," "you," "it."
Yes/___/ No/___/ 079. Puts 2 sentences together with the words "and, or"
Yes/___/ No/___/ 080. Swings, pumping by self.
Yes/___/ No/___/ 081. Draws or copies a square.
Yes/___/ No/___/ 082. Prints a few simple words from a copy.
Yes/___/ No/___/ 083. Stands without support.
Yes/___/ No/___/ 084. Follows simple instructions.
Yes/___/ No/___/ 085. Uses the words "fast" and "slow" correctly.
Yes/___/ No/___/ 086. Asks questions beginning with "how."
Yes/___/ No/___/ 087. Reads four or more words.
Yes/___/ No/___/ 088. Competes in games with other children, such as tag, hide-and-seek, hopscotch, etc.
Yes/___/ No/___/ 089. Climbs into an adult's chair and seats self.
Yes/___/ No/___/ 090. Picks up objects with one hand.
Yes/___/ No/___/ 091. Does simple number additions up to 10, such as 2+2, 3+5, 1+4.
Yes/___/ No/___/ 092. Knows the meaning of "same" and "different".
Yes/___/ No/___/ 093. Names a few familiar objects in picture books.
Yes/___/ No/___/ 094. Knows what "half" means.
Yes/___/ No/___/ 095. Rolls over from stomach to back.
Yes/___/ No/___/ 096. Plays with other children.
Yes/___/ No/___/ 097. Identifies red, green, yellow, blue by name correctly.
Yes/___/ No/___/ 098. Points to or names the bigger of two objects when asked to do so.
Yes/___/ No/___/ 099. Hands a toy to mother when asked to do so.
Yes/___/ No/___/ 100. Claps hands.
Yes/___/ No/___/ 101. Uses a basket, pail, or some other container for carrying things.
Yes/___/ No/___/ 102. Feeds self with a spoon.
Yes/___/ No/___/ 103. Names the days of the week in correct order.

Yes/___/ No/___/ 104. Recalls past events; says things such as "Remember when we went..."
Yes/___/ No/___/ 105. Asks for "more" or "another one".
Yes/___/ No/___/ 106. Waves "bye-bye."
Yes/___/ No/___/ 107. Goes to the toilet without any help.
Yes/___/ No/___/ 108. Gives directions to other children.
Yes/___/ No/___/ 109. Tattles or tells on other children.
Yes/___/ No/___/ 110. Uses the word "you" in sentences.
Yes/___/ No/___/ 111. Walks up and down stairs alone.
Yes/___/ No/___/ 112. Builds a tower of two or more blocks.
Yes/___/ No/___/ 113. Stoops.
Yes/___/ No/___/ 114. Says "I can't," "I don't know," or "You do it".
Yes/___/ No/___/ 115. Tells when one object is longer or shorter than another object.
Yes/___/ No/___/ 116. Draws a picture of a man/woman that has at least 3 parts, such as head,body,arms,legs,eyes,nose,mouth.
Yes/___/ No/___/ 117. Recognizes & names all the letters of the alphabet.
Yes/___/ No/___/ 118. Eats with a fork.
Yes/___/ No/___/ 119. Sings simple songs.
Yes/___/ No/___/ 120. Responds to simple questions appropriately with "yes" or "no".
Yes/___/ No/___/ 121. Toilet trained for bladder control.
Yes/___/ No/___/ 122. Uses names of familiar objects.
Yes/___/ No/___/ 123. Puts 2 or more words together to make a short sentence.
Yes/___/ No/___/ 124. Asks questions beginning with "where."
Yes/___/ No/___/ 125. Climbs on chair, stool, or box to reach things.
Yes/___/ No/___/ 126. Knows names of playmates.
Yes/___/ No/___/ 127. Tells what action is going on in pictures - for example, "Kitty is eating."
Yes/___/ No/___/ 128. Remembers where things are kept in the house.
Yes/___/ No/___/ 129. Feeds self without help.
Yes/___/ No/___/ 130. Expresses likes and dislikes in words.

Appendix 3 Questionnaire/rating Scale for the Speech-Language Pathologist

1. TRANSACTION TYPE /____/
   (2-assessment, 3-review, or 9-intake)
2. LHA /____/ 3. SO /____/

4. TODAY'S DATE /yr ____ /mo ____ /da ____/

5. PATIENT'S ID# /____/____/____/____/____/____/____/____/

6. GENDER /___/ (M or F)

7. CHILD'S DATE OF BIRTH /____/____/____/
   yr mo da

COMMUNICATION DISORDER(S) IDENTIFIED (please rate each of the following according the adapted Severity Rating Scale)

SEVERITY RATING 0-normal 1-mild
2-mild-moderate 3-moderate
4-moderate-severe 5-severe

8. Articulation/Phonology /____/

9. Expressive Language /____/

10. Receptive Language /____/

11. Fluency /____/

12. Voice /____/

13. No Communication Disorder Identified /____/ please check off if applicable

HEARING

14. Was hearing assessed by an audiologist? yes/___/ no/___/

CONCOMITANT CONDITIONS IDENTIFIED (please check off each box if applicable using the definitions provided in the CRISSP manual on pages E-6 through E-8)

15. No condition /___/
16. aphasia /___/
17. apraxia /___/
18. dysarthria /___/
26. adverse behavior /___/
27. visual impairment /___/
28. environmental factors/___/
29. perceptual/learning disorder /___/

19. cerebral palsy /___/

20. cleft lip/palate /___/

21. hearing impairment /___/

22. mental retardation /___/

23. autism /___/

24. laryngectomy /___/

25. multi-lingual/ESL /___/

30. multiple handicap /___/

31. chronic recurrent middle ear disease /___/

32. dental /___/

33. tongue thrust /___/

34. cranofacial anomaly /___/

35. other_____

PSYCHOLOGICAL: Based on your possibly brief experience with this child, please try to estimate a range of current mental/cognitive functioning by placing a checkmark as follows:

35. above average /___/ 36. average /___/

37. below average /___/ 38. mentally handicapped range /___/

39. briefly describe what the estimate is based upon (e.g., receptive language score, knowledge of formal IQ test results, or ?) _____

40. If psychological and/or psychiatric services were needed for the assessment or treatment of this child, through what agency could they be obtained? _____

41. CHILD'S AGE AT TIME OF ASSESSMENT /yr /mo /da /

42. Name of speech-language pathologist completing this form (please print) _____

RATING SCALE OF A CHILD'S SOCIAL CONVERSATIONAL STYLE

(SPEECH-LANGUAGE PATHOLOGIST) (*)

I. CHILD number /___/___/___/___/___/___/___/___/

INSTRUCTIONS:

Please read the descriptions on the next page and think about the conversations that this child had with you during assessment and/or treatment sessions. Please read all the descriptions at least once before doing the following:

In the box beside every description, please mark one number for this child according to the guidelines given at the top of the next page. You are to consider this child's willingness to begin conversations with you and to respond to you during conversations. Your judgment should take into account what you think are reasonable expectations for other children with similar language abilities.

* please note that these descriptions involve a synthesis or paraphrasing by the researcher, Donald Croft, of the specific words or comments used by Dr. Marc E. Fey of the Department of Communicative Disorders at the University of Western Ontario to describe the four classifications of social conversation that he proposes in his 1986 text Language Intervention with Young Children published by College-Hill Press in San Diego, California (Fey, 1986).

INSTRUCTIONS:

please mark only one number in each and every box

0 generally not true of this child
1 somewhat or sometimes true of this child
2 very true or often true of this child

41. /___/ This child willingly and actively starts conversations with me. This child responds to my requests or comments as much as I would expect. This child seems to have a sincere desire to communicate information to me. This child makes good use of the language skills he or she has. However, sometimes it may be difficult to figure out what he or she is trying to tell me. (AC)

42. /___/ This child willingly participates in conversations, but it seems that he or she tends to "speak only when spoken to". This child tends not to ask questions nor start discussions very often. Generally, this child is not assertive. This child actively and willingly answers my questions, but sometimes the answers may be very limited and not add new information in a way that could help to keep the conversation going. (PC)

43. /___/ This child often seems unwilling or disinterested in responding to my questions or comments, except with a bare minimum of information. This child does not often approach me or ask me something, except under particular circumstances, such as when he or she really wants me to get something. Even though this child has the language abilities to participate more, he or she does not socially interact with me as much as I would expect. (IC)

44. /___/ This child can be quite talkative and often starts conversations or initiates social contact. However, this child has difficulties in either starting an appropriate topic of conversation or staying on topic. Sometimes I struggle without much success to understand and follow the "thread of ideas" of what this child is trying to tell me. I struggle because this child's words or phrases often have very limited or no relationship to what he or she said before, or sometimes to what I just said. (VN)

THANK YOU FOR YOUR TIME AND EFFORTS, YOUR INFORMATION WILL PROVE TO BE MOST HELPFUL TOWARDS SUCCESSFUL COMPLETION OF THE PROJECT.

Appendix 4 Parent Letter and Consent Form

Dear Parent(s) or Guardian(s):

My name is Donald Croft and I am a child psychologist at the Glenrose Rehabilitation Hospital in Edmonton. This letter will introduce you to a research project that I am conducting with the direct support of the Hospital and Alberta Health. I am using questionnaires to document the psychological development of preschool children who have communication problems. This project involves children who are receiving speech-language assessment services. The knowledge gained from this study should improve our ability to help similar children in the future. In addition, completion of this project will partially fulfil the requirements for my Doctor of Philosophy degree at the University of Alberta.

If you are willing to participate, then please read and sign the consent form on the other side. I am asking that you complete the forms enclosed in this envelope while your child is being seen by the speech-language pathologist. There is a pen in the envelope for you to use and keep. When you are done, please seal up all of your forms (including the consent form) in the return envelope provided. After you give the sealed envelope back to the speech-language pathologist, it will be mailed to me for analysis. If by chance you do not complete all of the forms before having to leave you can mail them to me yourself in the envelop provided.

Thank you very much for your time and effort in completing the forms, your help is very much appreciated.

PLEASE NOTE: You are not under any obligation to participate, so if you chose not to, it is quite okay to simply return all of this envelope to the speech-language pathologist. Please do not seal it, so that it can be used again.

Yours truly

Donald C. Croft, Chartered Psychologist

Consent Form Re: _____ _____
patient's ID# LHA

PROJECT TITLE: Public Health Identification of Psychological Characteristics in Preschoolers with Specific Language Impairments

INVESTIGATOR: Donald Croft, Chartered Psychologist

The purpose of this research project is to use various questionnaires to document the psychological development of preschool children who have communication problems. Although parents and children in this project may not benefit directly from this study, it should lead to improved services for similar children in the future.

The study is being conducted on 4 and 5 year old children only. Parents complete the Child Behavior Checklist, the General Development Scale, the Rating Scale of a Child's Social Conversational Style and the General Information and History Questionnaire. It takes 35 - 50 minutes to complete the forms. This consent will also allow the speech-language pathologist to provide ratings of your child's communication development, including a list of any associated developmental conditions and an estimate of current cognitive functioning.

Your child will be identified only by a number and the information collected will always remain confidential. However, if you indicate a significant number of behavioral concerns on the Child Behavior Checklist, I will have the speech-language pathologist alert you so that you can talk to your child's physician about your concerns.

You may withdraw your consent at any time and you can refuse to answer any of the questions. Similarly, I may terminate the research at any time. If you have questions regarding this study, please contact me at 471-2262, extension 2456.

THIS IS TO CERTIFY that I give consent to the investigator, Donald Croft, to use both the forms that I complete and the ratings provided by the speech-language pathologist for the purposes of this research project.

Parent/Guardian signature _____

Witness signature _____ date _____

Appendix 5 Adapted Severity Rating Scale (CRISSP)

ADAPTED SEVERITY RATING SCALE*

The severity of each disorder identified is rated according to the following scale:

0 = Normal
1 = Mild
2 = Mild-Moderate
3 = Moderate
4 = Moderate-Severe
5 = Severe

The following section provides criteria defining the categories of mild, moderate and severe for disorders of articulation/phonology, language, fluency and voice. Criteria are not specifically outlined for categories of (2) mild-moderate and (4) moderate-severe. These are to be used to rate clients who have characteristics of (1) and (3) and of (3) and (5) respectively. The criteria are intended as guidelines to supplement clinical judgement and standardize ratings.

* Adapted by Donald Croft from the Severity Rating Scale (Revised 1987) (Alberta Community and Occupational Health: Speech Pathology Standing Program Committee) for the purpose of this research project only.

ARTICULATION/PHONOLOGY

	0 NORMAL	1 MILD	2 MILD-MOD.	3 MODERATE	4 MOD.-SEVERE	5 SEVERE
NUMBER OF PHONEME ERRORS BELOW DEVELOPMENTAL AGE		1-4 singleton phoneme errors		5-8 singleton phoneme errors		>9 singleton phoneme errors
SEVERITY OF PHONOLOGICAL PROCESSING DISORDER AS JUDGED BY SCALE USED		mild phonological processing disorder		moderate phono-logical processing disorder		severe phonological processing disorder
INTELLIGIBILITY AS JUDGED BY EXAMINER		readily intelligible although errors may be distracting		unintelligible with careful listening		unintelligible the majority of the time
CONSISTENCY		majority of phoneme errors produced inconsistently		variable consistency of phoneme errors		majority of phonemes consistently in error
STIMULABILITY		majority of phonemes stimulable in any context		variable stimulability of phonemes in any context		majority of phonemes not stimulable in any context

You may consider judging DEGREE OF DEVIANCY FROM TYPICAL ERROR PATTERNS.

EXPRESSIVE OR RECEPTIVE LANGUAGE

	0 NORMAL	1 MILD	2 MILD-MOD.	3 MODERATE	4 MOD.-SEVERE	5 SEVERE
DELAY OF Age Range: OVERALL 2;0-4;11 LANGUAGE 5;0-7;11 AGE		Delay Range 4 to 9 months 9 to 18 months		Delay Range 9 to 18 months 18 months to 2;6		Delay Range 18 months to 24 months 2;6 to 3 years+
TEST SCORE Standard ANALYSIS Deviation		equal to or greater than 1SD but less than 2SD below the mean for M.A.*		equal to or greater than 2SD but less than 3SD below the mean for M.A.*		equal to or greater than 3SD below the mean for M.A.*
Percentile Rank		10 to 25th percentile		2 to 9th percentile		less or equal to 1st percentile
DEGREE OF COMMUNICATIVE COMPETENCE WITHIN THE CLIENT'S APPROPRIATE MODALITY (GESTURAL, VERBAL, GRAPHIC)		level of competence interferes with normal communicative interaction		level of competence limits normal communicative interactions		level of competence prohibits normal communicative interactions

*If mental age is not available, estimate developmental age.

VOICE

	0 NORMAL	1 MILD	2 MILD-MOD.	3 MODERATE	4 MOD.-SEVERE	5 SEVERE
SOCIAL ACCEPTABILITY		untrained listener may not be aware of the problem		untrained listener is aware but accommodates to the problem		socially unacceptable listener cannot accommodate to the problem
NUMBER OF DEVIANT CHARACTERISTICS (e.g. resonance, pitch, breathing, tension)		1 deviant characteristic		2 deviant characteristics		3+ deviant characteristics
CONSISTENTLY/ STIMULABILITY		inconsistent deviant vocal productions in connected speech		consistent deviant vocal productions in connected speech; stimulable in connected speech		consistent deviant vocal productions in connected speech; not stimulable in connected speech

FLUENCY

	0 NORMAL	1 MILD	2 MILD-MOD.	3 MODERATE	4 MOD.-SEVERE	5 SEVERE
PERCENT OF DYSFLUENCIES		2-4%		5-11%		12%
PREDOMINANT TYPE OF DYSFLUENCY		primarily hesitations, interjections, phrase and whole word		primarily word and part word repetitions, prolongations		primarily blocks, phoneme repetitions of long blocks
TENSION/ CONCOMITANT BEHAVIOURS		negligible		evident		dominant significantly detracts from communication

Appendix 6 Definitions of Concomitant Conditions
(from E-6 to E-8 of the CRISSP Manual, Alberta Social Services and Community Health, 1987)

16. APHASIA/DYSPHASIA: an impairment of language functioning due to localized cerebral damage that results in impairment of comprehension, formulation, and/or expression of language.

17. APRAXIA/DYSPRAXIA: partial or complete inability to carry out voluntary sequential motor tasks when no impairment of muscle function exists.

18. DYSARTHRIA:a motor speech disorder where there has been damage to the central or peripheral nervous system with a resulting degree of weakness, slowness, incoordination or altered muscle tone in the speech mechanism.

19. CEREBRAL PALSY: paralysis or muscular incoordination due to intracranial lesion.

20. CLEFT PALATE: congenital or acquired fissure/fistula of the lip, hard palate, and/or soft palate (may include palatal insufficiency).

21. HEARING IMPAIRMENT: a degree of hearing loss that affects the patient's ability to acquire or use communication skills effectively.

22. MENTAL RETARDATION: significantly sub-average general intellectual functioning existing concurrently with deficits in adaptive behavior, and manifested during the developmental period.

23. AUTISM:a psychological disorder, the chief symptoms of which include withdrawal behavior, reduction or absence of socialization, bizarre play activity, echolalia, lack of verbal communication, purposeless activity, and perseveration.

24. LARYNGECTOMY: surgical removal of all or part of the larynx.

25. MULTI-LINGUAL/ESL: more than one language is spoken in the home or the primary language spoken or understood is not English.

26. ADVERSE BEHAVIOR: behavior which negatively affects the patient's ability to acquire or use communication skills effectively (e.g., hyperactivity).

27. VISUAL IMPAIRMENT: a visual disorder which presents a functional handicap.

28. ENVIRONMENTAL FACTORS: factors arising in the home, learning or work environment that affect the patient's ability to acquire or use communication.

29. PERCEPTUAL/LEARNING DISORDER: impairment in one or more of the basic processes involved in understanding or using spoken or written language; manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic.

30. MULTIPLE HANDICAP: severe impairment resulting from a combination of cognitive, sensory, and/or physical deficiencies

31. CHRONIC MIDDLE EAR DISEASE: the frequent re-occurrence of otitis media throughout a period of time greater than one year and through which the patient is at risk for (1) impaired acquisition of speech or language or (2) reduction in communicative effectiveness.

32. DENTAL: dental abnormalities, deviations or developmental stages which adversely affect articulatory performance.

33. TONGUE THRUST: atypical swallow pattern characterized by excessive forward thrusting of the tongue during swallowing.

Appendix 7 Case Study Information for Pilot Study

COMMUNICATION DISORDER(S) IDENTIFIED:

Please rate each of the following four case studies according the Severity Rating Scale - appendix B of the CRISSP user manual (Alberta Social Services and Community Health, 1987).

Mark each of the five communication skill categories with a rating of 0 - 5. Please note that the language rating is split into both receptive and expressive ratings, so disregard the fourth subsection of the language portion that refers to the number of language areas involved.

SEVERITY RATING:

0-normal 1-mild 2-mild-moderate

3-moderate 4-moderate-severe 5-severe

	case 1.	case 2.	case 3.	case 4.
a. Articulation/Phonology	/___/	/___/	/___/	/___/
b. Expressive Language	/___/	/___/	/___/	/___/
c. Receptive Language	/___/	/___/	/___/	/___/
d. Fluency	/___/	/___/	/___/	/___/
e. Voice	/___/	/___/	/___/	/___/

CASE STUDY # 1: child's age is 4 years 7 months or 55 months

Expressive One Word Picture Vocabulary Test (EOWPVT):

a. age equivalent score 59 months b. 55th percentile

Test of Auditory Comprehension of Language-Revised (TACL-R)

	AGE EQUIVALENT	PERCENTILE
a. word classes and relations:	44-47 m	11
b. grammatical morphemes:	44-47 m	18
c. elaborated sentences:	35-38 m	16
- total score:	43-45 m	12

Preschool Language Assessment Instrument (PLAI):

	MEAN	PROFILE PERCENTILE
a. matching perceptions:	2.3	strong 1-25
b. selective analysis of perception:	1.9	mod.- strong 25
c. reordering perception:	0.7	weak 1-10
d. reasoning about perception:	1.0	moderately weak 25

Preschool Language Scale - Revised (PLS-R):

a. auditory comprehension: 44 months

b. verbal ability: 42 months

NOTES: Oral language was readily intelligible and without phoneme errors. Fluency and voice were judged normal. In terms of conversational competence, the child's communication skills usually interfered and occasionally limited normal communicative interactions with both family and peers. Cognitive development was judged to be average.

CASE STUDY # 2: child's age is 5 years 7 months or 67 months

Preschool Language Scale - Revised (PLS-R):

a. auditory comprehension: 50 months

b. verbal ability: 47 months

Expressive One Word Picture Vocabulary Test (EOWPVT):

a. age equivalent score 69 months, at the 50th percentile

Test of Auditory Comprehension of Language-Revised (TACL-R)

	AGE EQUIVALENT	PERCENTILE
a. word classes and relations:	52-56 m	07
b. grammatical morphemes:	71-78 m	64
c. elaborated sentences:	54-57 m	14
- total score:	59-62 m	21

Peabody Picture Vocabulary Test - Revised (PPVT-R):

a. age score: 50 months, at the 12th percentile

Preschool Language Assessment Instrument (PLAI):

	MEAN	PROFILE	Std.dev < Mean
a. matching perceptions:	2.5	strong	@ mean
b. sel. analysis/perception:	1.2	mod.-strong	-4 std.dev
c. reordering perception:	0.8	weak	-3 std.dev
d. reasoning re: perception:	0.7	mod.-weak	-3 std.dev

NOTES: Child was exhibiting /θ, ʒ/ substitutions consistently on /ʃ, tʃ, dʒ, s, z/ and inconsistent errors on /l, r/ and associated blends. Speech was intelligible with careful listening and there was variable stimulability of phonemes. Fluency and voice were judged to be normal. Conversational skills limited normal communicative interactions with peers. Cognitive development was judged to be average.

CASE STUDY # 3: child's age is 4 years 7 months or 55 months

Preschool Language Scale - Revised (PLS-R):

a. auditory comprehension: 56.5 months

b. verbal ability: 42 months

Hodson Computer Analysis of Phonological Processes:

PATTERN DEVIATIONS	PERCENTAGE OF OCCURRENCE
syllable reductions	26
prevocalic singletons	02
postvocalic singletons	00
consonant sequences	83
stridents	72
velars	68
liquid (L)	91
liquid (R)	100
nasals	42
glides	70

Average of the phonological processes was 55 with a phonological deviancy score of 60 reflecting a severity interval of profound. Some vowel distortions were evident and the child was stimulable for s,f,m,k,n and sh in isolation. Functionally the child was often unintelligible. NOTES: Fluency and voice were judged to be normal. Conversational interaction with nonfamily members was usually limited a great deal by the child's communication skills. Nonverbal cognitive development was judged to be average.

CASE STUDY # 4: child's age is 5 years 3 months or 63 months

Preschool Language Scale - Revised (PLS-R):

a. auditory comprehension: 48 months

b. verbal ability: 38 months

Test of Auditory Comprehension of Language-Revised (TACL-R)

	AGE EQUIVALENT	PERCENTILE
a. word classes and relations:	47-50 m	04
b. grammatical morphemes:	48-51 m	13
c. elaborated sentences:	<44-47 m	<13
- total score:	<47-49 m	<05

Preschool Language Assessment Instrument (PLAI):

	MEAN	PROFILE	Std.dev < Mean
a. matching perceptions:	2.6	strong	@ mean
b. analysis of perception:	1.2	mod. weak	-2 to -3
c. reordering perception:	0.7	weak	-2 to -3
d. reasoning re: perception:	0.7	weak	-2 to -3

NOTES: A language sample consisting of 109 utterances was obtained with a MLU of 3.92 ranging from 1 to 11 and corresponding to a predicted age of 40.5 months. The child's speech was quite intelligible, but some dysfluency was noted. The child demonstrated some whole word repetition, plus repetition of initial sounds and syllables, but primarily hesitations and interjections. Voice was judged to be normal. Cognitive development was judged to be average.

VITA

NAME: Donald Charles Croft

PLACE OF BIRTH: Edmonton, Alberta, Canada

YEAR OF BIRTH: 1952

POST-SECONDARY EDUCATION:

1. Bachelor of Arts (Specialization Psychology) with Distinction, 1977, University of Alberta
2. Master of Education (Counselling), 1983, University of Alberta
3. Doctor of Philosophy (Special Education), 1991, Department of Educational Psychology, U. of Alberta

AWARDS:

1. 1988-1989 Province of Alberta Graduate Fellowship Award
2. 1989-1990 Province of Alberta Graduate Fellowship Award
3. 1989-1990 The Dr. E. W. Gauk - Westfield Award

RELATED WORK EXPERIENCE:

1. 1977-present: Fulltime member of the Department of Psychology in the Glenrose Rehabilitation Hospital, Edmonton, specializing in developmental pediatric services
2. 1983-1985: private contract with Edmonton Public School Board to provide psychological services for learning disabled students and their teachers/families
3. Chartered Psychologist (Alberta) since 1983 and member of Psychologist Association of Alberta, Canadian Psychological Association, and Canadian Register of Health Service Providers in Psychology